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87TH CONGRESS }
1st Session }

SENATE

{REPORT
No. 418

ADMINISTERED PRICES

DRUGS

REPORT

OF THE

COMMITTEE ON THE JUDICIARY
UNITED STATES SENATE

MADE BY ITS

SUBCOMMITTEE ON ANTITRUST AND
MONOPOLY

PURSUANT TO

S. Res. 52

EIGHTY-SEVENTH CONGRESS, FIRST SESSION

TOGETHER WITH INDIVIDUAL VIEWS

To Study the Antitrust Laws of the United States,
and Their Administration, Interpretation, and Effect

STUDY OF ADMINISTERED PRICES IN THE DRUG
INDUSTRY



JUNE 27, 1961.—Ordered to be printed

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*The Hon. Thomas J. Dodd was not a member of the subcommittee when the hearings were held on the subject matter covered by this report.

LETTER OF TRANSMITTAL

MAY 8, 1961.

HON. JAMES O. EASTLAND,
Chairman, Committee on the Judiciary,
U.S. Senate, Washington, D.C.

DEAR SENATOR EASTLAND: I am transmitting herewith for the information of members of the Committee on the Judiciary a report of the Antitrust and Monopoly Subcommittee entitled "A Study of Administered Prices in the Drug Industry," together with the views of Senators Dirksen, Hruska, and Wiley.

The inquiry of the subcommittee into administered pricing into specific areas has now embraced four major industries: steel, automobiles, bread, and now drugs. The selection of the drug manufacturing industry was made because of the great importance of the cost of drug products to most Americans, particularly to our older citizens. The study of administered pricing is continuing.

I want to acknowledge with appreciation the efforts of Paul Rand Dixon, formerly counsel and staff director, and Dr. John M. Blair, chief economist, both in the work of the hearings on which this report is based and in the assistance they rendered the committee in the preparation of this report.

Special acknowledgment should be made to Drs. E. Wayles Browne, Jr., Walter Measday, and Irene Till for their contributions, and to Mrs. Lucile B. Wendt for her technical assistance.

Sincerely,

ESTES KEFAUVER.

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87TH CONGRESS } 1st Session	SENATE	{ REPORT No. 448
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ADMINISTERED PRICES, DRUGS

JUNE 27, 1961.—Ordered to be printed

Mr. KEFAUVER, from the Committee on the Judiciary, submitted the following

REPORT

together with

INDIVIDUAL VIEWS

INTRODUCTION

With this study of ethical or "prescription" drugs, the Subcommittee on Antitrust and Monopoly has now issued its fourth report on administered prices in specific industries. Since the inquiry into administered prices was launched on July 9, 1957, the subcommittee, in addition to issuing these reports, has published 26 volumes of hearings, numbering 16,505 pages. These hearings have been concerned with definitions and concepts, alternative public policies, specific legislation designed to meet the problem, and the nature and behavior of administered prices and related factors in four important industries.

The first industry examined, steel, represents the Nation's basic raw material and has long been referred to as the bellwether of the economy. This was followed by an inquiry into automobiles which is not only the Nation's largest industry but one that exercises a pivotal influence upon the rate of activity in the economy generally. Bread, the "staff of life," is among the Nation's half dozen most important industries and in addition presents the interesting case example of a field in which there is no technological basis whatever for the concentration of sales in the hands of a few large companies but which is nonetheless in a process of change from a market-determined to an administered-price status. The importance of drugs lies not so much in the overall size of the business (which, however, with annual sales of \$2.5 billion is hardly negligible) but more in its crucial relationship to health and indeed life itself.

All of these industries share certain characteristics which have come to be associated with administered price industries. They con-

form to the criteria of such industries as set forth by Gardiner C. Means, the originator of the term, in that their prices are "set by administrative action and held constant for a period of time."¹ As the subcommittee stated in its first report on this subject:

Prices which are "administratively set," "administratively maintained" and are insensitive to changes in their market, e.g., they are maintained when demand falls off through a curtailment in output, are the "administered prices" with which most of the historical literature on the subject is concerned; these are the prices with the potential for inducing economic distress; and these are the prices which are of concern to this subcommittee in its inquiry into "administered prices."²

Prices in all of the four fields examined by the subcommittee—the basic materials industry, the consumer durable goods industry, and the two consumer nondurable goods industries—are "set by administrative action," and "held constant for a period of time" and are "maintained when demand falls off through a curtailment of output." In addition they share other common characteristics, such as price identity among the leading producers despite differences in costs and profits, price leadership and price followership, relatively high profit rates as compared to industry generally, relatively low "breakeven points," etc.

Moreover, in each there remains unsolved the problem of how to effect an equitable distribution of productivity gains made possible by scientific progress. Labor lays claim to these gains on the grounds that it is labor which is displaced by technological progress. Management bases its claims on the grounds that the installation of new and better machinery and equipment requires greater profits. But the consumer has a claim, too, on the grounds that there is no purpose to scientific progress in industry unless it ultimately results in lower prices or better products. In the past there has been no pressing need to be concerned with this problem. Under the theory of competition, on which our public policy toward industry has been based, the problem simply does not arise. It is assumed that as soon as any firm in a competitive industry makes an improvement which reduces its costs, it will make a corresponding reduction in price. The other firms will either have to make the improvement themselves or lose their business to the innovator. In any event the pioneering company gains the reward of increased business at least for a time, while the consumer receives the benefit of the innovation in the form of a lower price. But all this presumes the existence of price competition. Where prices are administered and where there is no price competition, the theory is not applicable. The question of how to bring about an equitable distribution of the fruits of scientific progress in such industries is thus essentially a new problem, for which there is no existing public policy.

But while sharing these and similar characteristics with other administered-price industries, the ethical (or "prescription") drug industry has a number of features which tend to make it unique.

¹74th Cong., 1st sess., S. Doc. 13, "Industrial Prices and Their Relative Inflexibility," Jan. 17, 1935, p. 10.

²84th Cong., 2d sess., "Administered Prices: Steel," Report of the Subcommittee on Antitrust and Monopoly to the Senate Judiciary Committee, 8. Rept. 1357, 1958, p. 6.

PART II

THE CONTROL OF THE MARKET

The extraordinary margins and profit rates in ethical drugs, as shown in part I of this report, are made possible by the existence of extremely high levels of concentration, with one or at most three large firms accounting for all of the output of most of the industry's products. A correlative condition is the poor position of smaller producers who probably face greater problems in getting their products distributed and used than in any other manufacturing industry. In some lines, small manufacturers are able to put their products on the market; but even though offered at prices substantially below those of the large firms, they usually are able to capture only a very small proportion of the market. There are a few lines, however, in which the price competition stemming from smaller enterprises has been sufficiently important to break down the rigid price structures of the large firms. Such price behavior is in striking contrast to that of similar products sold only by the major companies. Where effective competitive influences are absent, the methods of price determination followed by the large companies will inevitably yield margins and profit rates of the magnitudes shown earlier. This part of the report will be concerned with the concentration of the industry and the type of price-behavior which results therefrom.

CHAPTER 4. ECONOMIC CONCENTRATION IN ETHICAL DRUGS

At the outset a differentiation should be made between concentration of production and concentration of sales, or "control of the market" as it is often termed. It happens that in this industry there is an unusually high degree of specialization on particular products among the industry's major companies. Thus, the nine principal hormone products are produced by only 7 of the 20 largest companies. The diabetic drugs are produced by only 5 of the 20, the tranquilizers by only 6. In sulfas there are only three producers, in vitamins only six, in antibiotics other than penicillin eight, and in penicillin seven. More often than not a large company which markets a broad line of ethical drugs will itself produce less than half of the products, buying the remainder from other major companies, or in some instances from small specialty houses. In such arrangements the drug is usually purchased in bulk form, with the buying company performing the functions of tableting and bottling. An inevitable consequence is that concentration in terms of sales is lower than in terms of production.

But this should not be taken to mean that the latter type of figure is wholly without significance. As long as the legal doctrine prevails that sellers are free to select their own customers, the producing firm is in an advantageous position vis-a-vis its competitors who also happen to be its customers. Although the degree of dependence may

be mitigated by purchase contracts, most contracts have a terminal date. If the supplying firm does not wish to renew the contract and there are only one or two other producers, the buying firm may have difficulty in securing a new source of supply. This may be particularly true if he has made substantial inroads on the producers' sales or has failed to adhere to an established price structure. If, as is true more often than not, the supplier is a monopolist, the buying firm may not wish to duplicate the plant, equipment, and know-how necessary for production; he may also encounter a patented intermediate, a process patent, or other legal barrier to production. Hence, it can be seen that figures on concentration of production, while usually overstating concentration in the market as of a given time, nevertheless have a unique significance with respect to the concentration of economic power in the long run.

Concentration of production

During the hearings, concentration ratios prepared by the subcommittee staff were placed in the record for 51 products in the major product groupings—hormones, diabetic drugs, tranquilizers, sulfas, vitamins, and antibiotics. These ratios, presented in chart 8, show the percentage share of total U.S. output in 1958 accounted for by each of the 15 major drug companies which produce 1 or more of these products.¹ The 51 products represent at least two-thirds of the total value of all ethical drugs in 1958.² In addition to indicating the percentage of output accounted for by each of the major companies, the chart shows with an "X" those instances where a company sells a product but does not produce it; where for some reason a company produces a product but does not sell it to the drug trade, a circle is drawn around the concentration ratio.

There are in all 87 instances in which the 15 major drug companies produce and sell the 51 products shown on the chart. There are 127 X's on the chart representing instances where the drug company sells the drug but does not produce it; there are 14 instances of the anomalous situation where the company produces the drug but does not sell it.

Representing one extreme is Parke, Davis which sells 20 of the 51 products but produces only one (chloramphenicol), or a ratio of products sold to products produced of 20 to 1. At the other is Pfizer which also sells 20 products but manufactures 14, for a ratio of $1\frac{1}{2}$ to 1.

¹ In addition, the subcommittee sent its questionnaire to seven other companies, each a major factor in the drug industry. None reported that it manufactured any of these 51 products. These companies are Merck & Co., Norwich Pharmacal, G. D. Searle, Sterling Drug, U.S. Vitamin & Pharmaceutical, Vick Chemical, and Warner Lambert (hearings, pt. 21, p. 11742).

² Hearings, pt. 19, pp. 10722-10783. On the basis of information presented by Dr. Austin Smith, president of the Pharmaceutical Manufacturers Association, certain revisions in the original percentage figures were made. In addition, the information presented in the chart was expanded to indicate whether sales were made by a company which did not produce the product and whether sales were not made by companies which produced it (hearings, pt. 19, pp. 10773-10774, 10825, pt. 21, pp. 11740-11745).

The ratio of products sold to products produced for each of the companies is as follows:¹

Pfizer.....	1½ to 1.
Merck.....	1½ to 1.
Bristol-Myers.....	1½ to 1.
American Cyanamid (Lederle).....	2 to 1.
CIBA.....	2 to 1.
Hoffmann-LaRoche.....	2 to 1.
Lilly.....	3 to 1.
American Home Products (Wyeth).....	3 to 1.
Ohn Mathieson (Squibb).....	3 to 1.
Upjohn.....	3 to 1.
Abbott.....	3 to 1.
Schering.....	4 to 1.
Smith Kline & French.....	5 to 1.
Parke, Davis.....	20 to 1.

Thus, insofar as the 51 products are concerned, only 6 companies produce as many as half of the drug products which they sell. About half of the companies are faced with the possibility that their supplier may discontinue sales on at least two out of every three products which they market. In the degree of dependence by major companies upon others and particularly upon their competitors for their supplies, the ethical drug industry is unique among manufacturing industries.

There is still another way in which the concentration of production in this industry appears to be unique. It is an accepted maxim that among highly concentrated industries concentration typically takes the form of oligopoly (control of the few) rather than monopoly. Insofar as production is concerned, the drug industry represents a striking exception. This can be seen in the summary tabulation prepared from the preceding chart. It shows for the 51 products the number of firms required to produce 100 percent of the U.S. output:

TABLE 27.—51 ethical drugs—Number of companies required to produce total U.S. output

Type of drug	Number of drugs	Number of companies					
		1	2	3	4	5	7
Hormones.....	9	3	2	4			
Antibiotics.....	3	1	1	1			
Tranquilizers.....	7	6	1				
Sulfa.....	9	8	1				
Vitamins.....	9	3		4	1	1	
Antibiotics (excluding penicillin).....	9	5	1	1		2	
Penicillin.....	5	1	2				2
Total.....	51	27	8	10	1	3	2

¹ Includes Heccelst, not on table (Orinase).
² Esophage includes producer not among 22 major companies.
³ Includes a producer of B-2 not on table.
⁴ Includes 2 producers of A not on table.

In 27 of the products, or more than half, the entire U.S. output is produced by 1 of the 15 companies shown on chart 8. In sulfa drugs one company accounts for 100 percent of the output in eight of the nine products. In tranquilizers the condition of monopoly prevails

¹ The listing omits the unusual case of Carter which sells only one of the products, which, incidentally, is made for it.

ADMINISTERED PRICES—DRUGS

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in six of the seven products. In antibiotics (other than penicillin) the total output is produced by one company in five out of the nine products, and in hormones and vitamins, each, in three out of the nine. In 8 additional products concentration takes the form of "duopoly"—control by 2, while in 10 others the entire output is produced by 3 companies. Against the typical structure of concentration in manufacturing industries, it is indeed remarkable that in only 6 of the 51 products are there as many as 4 producers.

CONCENTRATION OF SALES

While the concentration of production reflects the underlying control of resources, it is the concentration of sales which indicates the control of the market. Where different products made by competing firms are substitutable for each other or where, because of buying and selling contracts among competitors, there are more sellers than producers, the concentration of sales will be lower than the concentration of production. Both of these conditions are exemplified in the broad spectrum antibiotics. Three of the broad spectrums are produced and sold exclusively by one company—Aureomyein by American Cyanamid, Chloromycetin by Parke, Davis, and Terramycin by Pfizer. Within the range of ailments for which they are substitutable for each other, the control of the market will be considerably less than the concentration of their production. There are, however, some ailments for which one or the other of these products may be considered to be the drug of choice, e.g., in the use of Chloromycetin to treat typhoid fever. Here the concentration in the market would tend to be identical with the concentration of production. An example of the second factor which results in a lower concentration of sales than of production is tetracycline, which is produced by three companies—American Cyanamid, Bristol-Myers, and Pfizer—but sold by five (the three producers plus Squibb and Upjohn).

Because of the importance of these two factors in the broad spectrum antibiotics, the subcommittee obtained, under subpoena, data prepared by a recognized market research firm showing the concentration of sales for all broad spectrum antibiotics. Chart 9 presents this information, broken down between new prescriptions (i.e., sales made to the drug trade) and hospital purchases.

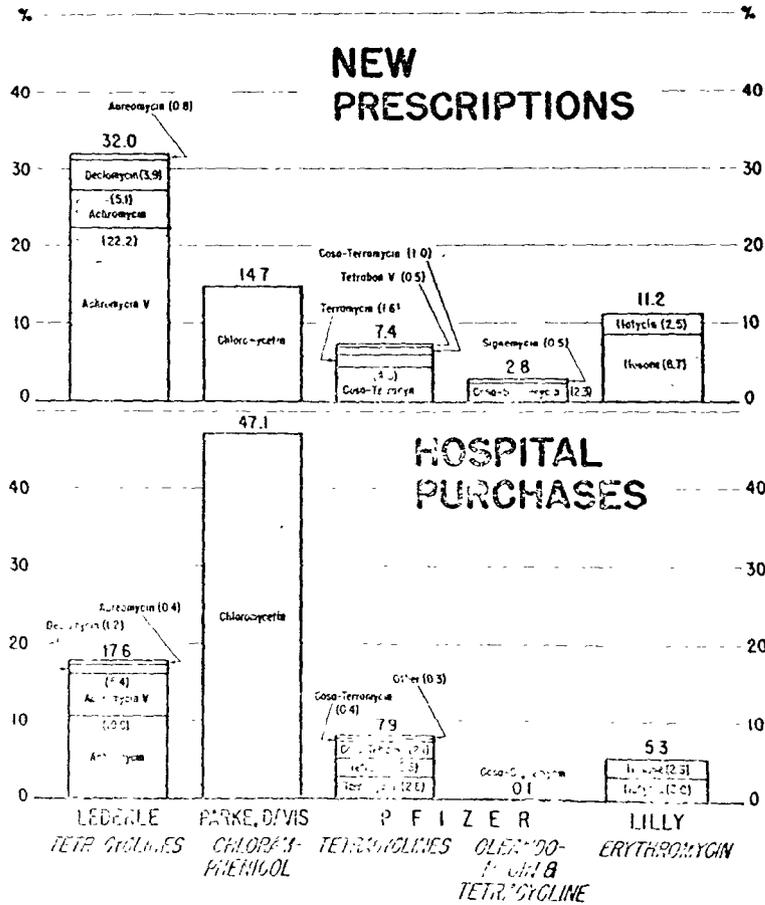
With its various forms of tetracycline, American Cyanamid accounts for nearly one-third of the market of new prescription purchases. In hospital sales the leader is Parke, Davis' Chloromycetin, with nearly half of the market. The better showing of Chloromycetin in hospitals is attributed to its efficacy against the resistant strains of staphylococci, which constitute a greater problem in hospitals than in outpatient treatment. With the addition of Pfizer the three companies—American Cyanamid, Parke, Davis, and Pfizer—account for 57 percent of the new prescription market and 73 percent of the hospital market. Such control of the market in the hands of only three companies represents by any standard a relatively high level of concentration, particularly in view of the breadth of the product grouping and the magnitude of its sales.

It is probably no mere accident that these three companies were the first to develop and market the broad spectrum antibiotics—American Cyanamid with Aureomyein (chlortetracycline) in 1948, Parke, Davis

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ADMINISTERED PRICES—DRUGS

CHART 9
LEADING ANTIBIOTICS—1959
 PERCENT OF MARKET*



* Other than penicillin, dihydrostreptomycin and streptomycin.

with Chloramphenicol (chloramphenicol) in 1948, and Pfizer with Terramycin (oxytetracycline) in 1949. They were the first to promote broad programs with costly advertising and sales campaigns, and the first to make use of radio ads in their products designed to give the appearance of quality and improvement. And of course they were the first in this case to obtain patents, which not only eliminated competition on the particular product, but gave them much of the royalties with which at least two of the three have been able to maintain their position against the challenge of new broad spectrum drugs.

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Another product grouping for which statistical information is available on the concentration of the market is corticosteroids. During the hearings Merck supplied figures showing new prescriptions for all types of corticosteroids broken down by leading brands.¹ This information for the first 9 months of 1959, together with the generic name of the product and the identity of the company, is shown in the following table:

TABLE 28—Corticosteroid plain tablets—leading brands by percent total new prescriptions (January–September 1959)

Brand	Product	Company	Percent total	Cumulative
Decadron.....	Dexamethasone.....	Merck.....	26.9	26.9
Aristocort.....	Triamcinolone.....	American Cyanamid.....	18.8	45.7
Medrol.....	6 Methyl Prednisolone.....	Upjohn.....	17.2	62.9
Meticorten.....	Prednisone.....	Schering.....	13.5	76.4
Kenacort.....	Triamcinolone.....	Squibb.....	5.5	81.9
Deronil.....	Dexamethasone.....	Schering.....	4.8	86.7
Sterane.....	Prednisolone.....	Pfizer.....	2.0	88.7
All others.....			11.3	100.0

Source: Supplied to subcommittee by Merck & Co.

Four brand name products accounted for over three-fourths of the market. The leading company was Merck with Decadron (its brand of dexamethasone). Virtually tied for second are American Cyanamid, which markets triamcinolone under the trade name of Aristocort, and Schering with two products, its brand of prednisone (Meticorten) and of dexamethasone (Deronil). Sales to the trade by small companies comprise only part of the "all other" figure of 11.3 percent. And these sales may soon be a thing of the past, since under contracts now in effect bulk sales of prednisone to small firms will cease if the patent is awarded to any of the major firms involved in the current interference proceedings at the Patent Office. Again the importance of being first is evident. The first corticosteroid was cortisone, introduced by Merck, while prednisone, the most improved of the earlier steroids, was first marketed in this country by Schering.

The control of the market is also relatively high in the other major categories of drug products. The diabetic patient who cannot be transferred to the new oral antidiabetic drugs will probably obtain his requirements of insulin from Lilly, which has 77 percent of the production, or the Squibb division of Olin Mathieson which accounts for 19 percent. Aside from Merck, which has only 4 percent of the production, none of the other 15 major drug companies offers insulin for sale. Patients who can be placed on oral medication are virtually limited to two drugs—tolbutamide (Orinase) and chlorpropamide (Diabinese); a complete monopoly of U.S. sales of the former is enjoyed by Upjohn and of the latter by Pfizer.² In diabetic drugs as in antibiotics the leading firm was the first on the scene. Although the basic patent on insulin held by the University of Toronto expired more than 20 years ago, through a series of improvement patents and licensing arrangements with Danish firms on newer types of insulin the international structure of patent control still remains largely

¹ Hearings, pt. 14, pp. S174-S175.

² As compared to the other two, sales of a third oral antidiabetic drug, DBI, produced and sold entirely by U.S. Vitamin, are quite small.

During the hearings, representatives of small firms engaged in the manufacture of ethical drugs described their difficulties in some detail which they attributed chiefly to patent restraints and to vast expenditures on advertising and sales promotion by their large rivals. It was emphasized, however, that this is an industry in which the amount of capital required to engage in production (as distinct from distribution) is not a significant deterrent. On this point Dr. Philip Berke, vice president of Formet Laboratories, Roselle, N.J. (which is itself a supplier of bulk prednisone) testified that with a capital expenditure which would be regarded as extremely small in most industries he could supply the prednisone requirements of the entire world:

Mr. DIXON. Dr. Berke, if it were possible for you to obtain all of the patent rights and facilities to fully engage in the cortical steroid market, what would you say that the investment would take? Would you give me an opinion as to what investment it would take for you, or for a very small business firm, to go into this manufacturing process fully?

Dr. BERKE. Well, of course, that depends on the quantities you want to produce, and if the research has been accomplished, the sum wouldn't be too large.

Mr. DIXON. Would you say that you could do this on an investment of, say \$4 or \$5 million?

Dr. BERKE. Oh, I could do it very well on that. We could do very well on \$5 million. I would say that we could probably produce all the prednisone and prednisolone that is required in the world for a \$5 million investment.⁷

In Dr. Berke's view it is not the amount of capital required but rather patent restrictions which constitute the chief barrier to small firms. He specifically objected to (a) the failure of large companies to license small firms when they license other large firms, (b) the right of a patent holder of an intermediate to prevent its use to produce a different finished product, and (c) the right of an owner of a product patent to prevent the sale of the product when manufactured by a new and improved process:

If the holder of a patent issues a license or cross license to another firm, and by his own volition gives up his monopoly on the product, then it should be compulsory for him to license all other companies wishing a license regardless of the size of the company.

In order not to retard research and development of new products, I would also suggest mandatory issuance of licenses in the case of compounds that are not to be marketed as such, but are to be used as intermediates for the production of other compounds.

For example, a company receives a patent on product A which it markets as such. It should of course not be mandatory for the company to issue a license on product A to another firm who wishes to market the same product.

However, if another company wishes to produce product A as an intermediate for producing an entirely different product,

⁷ Hearings, pt. 14, p. 8056.

bination unacceptable—no matter how useful it might be to the medical profession.

The evidence submitted to the subcommittee indicates that few of the smaller companies even attempt to secure licenses from the larger manufacturers, either under patent applications or issued patents.¹⁰ The policy of polite refusal has become such an established practice in the drug industry that as Mr. Seymour N. Blackman, executive secretary of Premo Pharmaceutical Laboratories, put it, he didn't ask because "Mostly we knew it was futile, but we tried here and there." This witness had just testified: "I cannot tell you of any significant patent in the pharmaceutical field that we, and several of the smaller drug firms, have been licensed under."¹¹

Even when a small company is the discoverer of an important new drug and has an excellent research organization, it still may encounter insurmountable difficulties. Such a case is provided by the example of Syntex Corp. of Mexico which is credited by the Pharmaceutical Manufacturers Association as being the originator of prednisone and is a party to the current interference proceeding on the basis of its discoveries in 1950. Being uncertain of the ultimate outcome of these proceedings in the Patent Office, Syntex approached Schering, the largest seller of prednisone, for a license and was refused. Beginning in 1956, Syntex then began to ship bulk prednisone into the U.S. market in substantial quantities, mostly to smaller companies who engaged in active price competition in sales to Government agencies and private hospitals. Schering then instituted an infringement action, which was countered with an infringement action by Syntex.¹²

At the time Mr. Francis Brown, president of Schering, appeared before the subcommittee, Senator Kefauver inquired about the current Schering-Syntex relationship and was informed an agreement had been reached. A request was made by the subcommittee for a copy of the agreement. In substance, the agreement provides that if Schering secures the patent, Syntex may sell in bulk only to Schering licensees, although it may sell "in pharmaceutical dosage form under its own label" (which, lacking a distribution organization, it has never done).

Syntex represents the case of a small independent company which gambled heavily on research. According to one expert, this company has one of the finest research groups in steroids in the world.¹³ It applied for and received numerous important patents. It was the source of supply of smaller companies who injected competition into the prednisone market. With the import of the Syntex product an accomplished fact, Merck and Pfizer also began to make bulk sales. Bulk prices fell rapidly from 1955 to 1960.

Mr. Seymour N. Blackman of Premo told the subcommittee:

I assure you there is no free ride in this industry, given by any of the big manufacturers. If they are selling, to us, in

¹⁰ The single exception in the subcommittee's hearings was meprobamate (Miltown and Equanil) where hundreds of companies—large and small—from all over the world sought licenses to market this product. ¹¹ Important patents under which Premo requested a license, which was refused, are tetracycline (from Pfizer) and dexamethasone (from both Merck and Schering, who are involved in an interference). Neither company accepted Premo's offer to take a license under the application, despite an offer to pay royalty on before and after the issuance of a patent, and neither granted Premo's request for a bulk price. ¹² Apparently infringement of process patents held by each. ¹³ Applezweig, "Steroid Research II," Drug and Cosmetic Industry, July 1958.

He went on to add, however, that because of the difficulties faced by the small company in promoting a new product or engaging in a patent controversy with a large concern, it was their general practice to sell the patent rights to their development on a "lump basis":

Mr. BLACKMAN. Also, we have sold, outright, some of our patents because we just don't have the money to promote them.

* * * * *

When we issue licenses, we receive what is known as a paid-up royalty, one lump sum.

Mr. PECK.¹⁶ Then you have virtually sold your licenses?

Mr. BLACKMAN. We have sold them, chiefly, because we know that a patent is little more than a piece of paper and a license to fight your competitors in court. I would much rather take a small return, if you would call it a gratuity, than to go into court and battle my larger competitors. If they are willing to take a license, under the patent, at a nominal fee, and we have received, for example, on this drain-away feature, some \$70,000 in royalties, paid-up patents, both here and abroad, we are happy.¹⁷

In Mr. Blackman's opinion, the principal problem faced by the small drug manufacturer is the difficulty of competing in the face of the "tremendous" amounts spent by the large drug companies on advertising and promotion:

As this investigation proceeds, it will become evident to you that the only real competition that we have in our field is the tremendous competition for the eye and ear of the physician, how many pages of advertising we can put out, how many samples we can distribute, how many detail men we can put in the field.

These and these alone govern the ultimate acceptance of the product.¹⁸

The small company, according to Mr. Blackman, simply cannot afford to pay for the type and quantity of advertising now required for successful promotion. "Advertising costs", he said, "are so disproportionately expensive small companies cannot afford to make their way in the marketplace."¹⁹ He gave as evidence the cost of the type of advertisements now appearing in medical journals and the expense of maintaining a force of detailmen:

The smaller manufacturer, even if he had the means of applying additional research, to develop unique products for the market, would still lack the funds to properly propagandize and promote such items.

¹⁶ Theodore Peck, former subcommittee minority counsel.

¹⁷ Hearings, pt. 14, pp. 823, 825A.

¹⁸ Hearings, pt. 14, pp. 825, 826. As evidence of the volume of advertising and promotional effort, Mr. Blackman cited an article by Walter L. Griffith, director, product advertising and promotion, Parke, Davis & Co. which appeared in "Proceedings of Program, Mid Year Conference, American College of Physicians," 1959.

¹⁹ To live, the builder of better mousetraps will sell more mouse traps, only if he builds a path to the world which presents the advantages of his trap with more ingenuity and impact than his competitor.

It is such activity as this which, in the aggregate, has caused the ethical pharmaceutical industry of this country to provide during the past year 3,798,488,000 pages of paid journal advertising, 741,213,760 direct mail impressions; and well in excess of 18 to 20 million physician and pharmacist calls" (ibid., p. 8215).

¹⁸ Hearings, pt. 14, p. 8210.

As an illustration, Mr. Tobias Wagner, advertising director of Smith Kline & French, stated that his company spent \$130,000 on eight mailings to physicians, merely devoted to the discussion of the hazards attending the use of a product called Thorazine.

From this, you might imagine the program attendant to advertising the attributes of this product, and then add additional costs for direct mailing, sampling, detailing, and various general advertising and you get a fantastic picture.

The tendency today is for the pharmaceutical company who, a few short years ago, considered a full-page journal ad, in color, sufficient to gather the physicians' attention, now uses 4-, 8-, and 16-page inserts. Some of these inserts actually assume the proportion of exhaustive monographs. Business is so good in the medical journal field that there are over 300 different journals which exist on the basis of paid advertising of ethical pharmaceutical specialties. It is estimated that in today's market, journal advertising, direct mail advertising, and sampling would require an expenditure of approximately \$1 million to do an effective job in partially promoting a single ethical specialty.

This, however, is not the most expensive part of the advertising program. According to a speech delivered by Mr. Tobias Wagner, at a recent national pharmaceutical forum for pharmacy educators, he states:

"The well-trained detail man can do what medical ads and direct mail cannot do. The pharmaceutical company spends between \$9 and \$10 for every physician visit."

Couple this with the 200,000 physicians in the United States and we get a cost of \$2 million for making only 1 detail call on each physician.

Well, it is not necessary to cover every physician with 1 detail, so, let us cover only one-half. It is therefore my conservative estimate that it has taken, in some cases, \$2 and \$3 million of initial advertising to bring certain new products into the marketplace, in the light of the tremendous pressure and competition for the physician's eye and ear.²⁰

According to Mr. Blackman, Premo did try, without success, to emulate the larger companies; it established its own detail force, gave cocktail parties for physicians, etc.:

These detail men were actually carefully schooled. They were headed up by experienced elder statesmen, as it were. They were given what we called the "canned detail." They were exercised in the pros and cons as to the merits and disadvantages of the products which they were advertising. And they were schooled, intelligently, as to how to answer questions on any given item that we were detailing, at any given time.

* * * * *

Senator HART. So far as the detail men who were employed by you are concerned, you would say that they con-

²⁰ Hearings, pt 14, pp. 8218-8219.

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tributed to the knowledge of a physician and his understanding of the product, is that right?

Mr. BLACKMAN. To a limited extent. Let's not beg the question. They were out there to sell our products to the physician.²¹

While the company's expenditure on journal advertising, sampling and detailing nearly tripled between 1948 and 1953, its net sales, while rising from \$1.9 million in 1948 to \$2.8 million in 1951, had by 1953 nearly fallen back to the 1948 level. In the next 2 years, despite a further increase in advertising and promotion, sales continued to decline.

By the end of the year 1956, the handwriting was on the wall, without doubt. The program, which we had inaugurated, while meeting initial success, fell through even though advertising expenses increased percentagewise and dollarwise.

I attribute the failure of this program to the tremendous increase in the advertising dollars spent by our large competitors, to the extent that our efforts appeared, in the market place, as a mere spark in a vast conflagration.²²

Noting that the pharmaceutical industry had come to be referred to as Wall Street's "fair-haired boy," Mr. Blackman referred to new stock issues of the large companies and the existence of "a lot of money that could be spent in advertising pharmaceuticals":

Mr. KYRRIE.²³ I would like to learn more about your experience several years back, before 1956. I noticed in your old folder that you were advertising the fact that you have detail men. You were advertising the fact that you will make cocktail parties and other facilities available to anybody that would come to your place. You were making known the fact that you will invite groups from pharmaceutical colleges.

Now weren't you trying to do the same things that these large corporations are doing?

Mr. BLACKMAN. The answer is "Yes"; we tried, desperately, to emulate these large manufacturers, and, as I stated before, we didn't make it.²⁴

Mr. Blackman estimated that three-quarters of a billion dollars a year is spent on drug promotion, much of which he regarded as pure waste in view of the nature of the demand:

I personally feel that the American public is overpaying at least three-quarters of a billion dollars, at wholesale prices, annually, for the medication which they purchase on prescription.

I arrive at this figure by examining the cost of approximately three-quarters of a billion dollars annually spent on advertising and sales promotion, coupled with almost another three-quarters of a billion dollars in net profits.

²¹ H891, p. 8222.

²² Hearings, pt. 14, p. 8215.

²³ Nicholas N. Kirtle, subcommittee minority counsel.

²⁴ Hearings, pt. 14, p. 8255.

Spending three-quarters of a billion dollars in advertising to produce \$2½ billion in sales seems to me to be excessive, especially since the products being propagandized are absolutely necessary and an artificial demand need not be created. It is my personal opinion that at least one-half of the sum spent on advertising and promotion is totally wasted.

Likewise, I feel that the three-quarters of a billion dollars in net profits, before Federal corporate taxes, is excessive by at least 50 percent.

This brings us to the figure of three-quarters of a billion dollars which the public pays unnecessarily.

* * * * *

I say that the market does exist. When we are sick, we must buy medication. This doesn't fall into the category of advertising for a washing machine, for example, to create a false demand, or to make a new car stylish. This field is something we need. It is like electricity or clothing. We don't have to create a false market; the market exists.²⁵

Mr. Myron Pantzer, vice president of the Panray Corp., agreed that in the drug industry "advertising * * * costs a lot of money," and that his firm did not have the resources "to put several million dollars into the promotion of a product." That the necessity of making such outlays may actually impede the introduction of new and better drugs was implicit in his answer to the following question:

Mr. DIXON. Suppose you came up with product X, a steroid hormone, that was, we will say, more potent than even dexamethasone, and actually had no side effects, none whatever. How would you get the message to the doctor?

Mr. PANTZER. We as a company would, frankly, be stuck; we couldn't get the product off the ground.²⁶

CHAPTER 5. THE BEHAVIOR AND DETERMINATION OF PRICE

THE BEHAVIOR OF PRICE

The difference in the behavior of administered versus market-determined prices, which has been noted in the subcommittee's earlier reports and hearings,²⁷ is nowhere more dramatically illustrated than in the drug industry. Where the only sellers consist of one or a few of the major companies, prices tend to be unchanged over long periods of time, with the different companies selling at identical prices. Where there is an "uncontrolled" bulk supply to which small manufacturers serving the trade can secure access, not only does the bulk price tend to be flexible, but the drug in packaged form will be offered at widely varying prices. This is true of both of the markets for drug products.—sales to the regular trade (i.e., the retail drug store) and sales to institutional buyers (e.g. governmental bodies, hospitals, etc.). The difference in prices to the drug

²⁵ Hearings, pt. 14, pp. S294-S305.

²⁶ Hearings, pt. 15, p. 9373.

²⁷ Cf. e.g., Subcommittee on Antitrust and Monopoly, "Administered Prices: Steel" S. Rept. 1337, 83rd Cong., 2d sess., p. 8, and hearings, pt. 19, "Administered Price Inflation: Alternative Public Policies," pp. 4127-5013.

trade will be examined here in two of the few areas in which small firms are able to enter the market—penicillin and prednisone.

SALES TO THE DRUG TRADE

While most antibiotics are sold by only one or a few of the large companies, there are two areas in which vigorous price competition exists in both bulk and packaged form. These consist of the older forms of penicillin, which are not patented, and streptomycin, which is produced by several firms operating as licensees under the patent held by Rutgers University. Neither Sir Alexander Fleming nor any of the other British scientists associated with its early development ever applied for a patent on penicillin, and no license has ever been required for its production. Moreover several of the important steps and methods involved in the fermentation process were discovered and patented by the U.S. Department of Agriculture which licensed all applicants on a royalty free basis. Streptomycin was discovered by Dr. Selman A. Waksman while he was conducting research at Rutgers University. Although Merck had exclusive rights to the exploitation of all patentable scientific discoveries by Dr. Waksman resulting from research subsidized by it, Dr. Waksman persuaded the company to give up its exclusive rights to streptomycin and as a consequence several firms in addition to Merck were licensed to produce and sell the product:

Prior to 1950 ease of entry into the penicillin market and ease of entry into the streptomycin-dihydrostreptomycin market existed in the antibiotics industry. This was an important factor in the development of price competition among the producers of streptomycin and dihydrostreptomycin, as well as among the producers of procaine penicillin. No restrictions existed with respect to production of sodium and potassium penicillin, as far as can be determined.²⁸

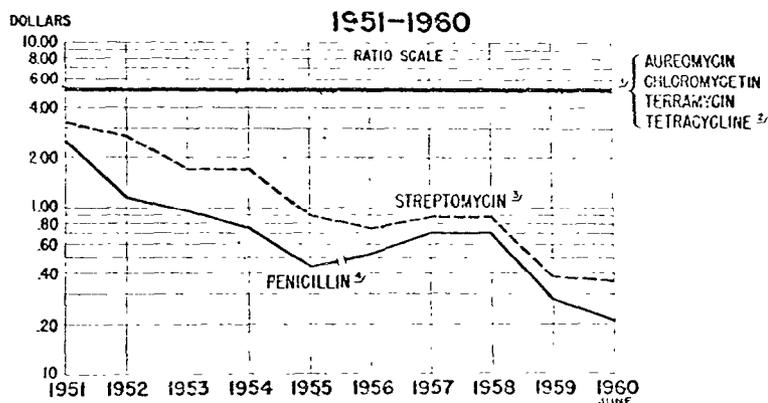
The broad spectrum antibiotics, introduced in late 1948-50, were subject to a few price reductions during that early period. By 1951, however, the price of each had stabilized at the identical figure of \$5.10 to the druggists,²⁹ where it has been maintained through the third quarter of 1960. What appears to be a straight black line near the top of chart 10 is the price trend of the broad spectrums during this 10-year period.³⁰ In contrast to the complete rigidity of the broad spectrums the bulk prices of penicillin and of streptomycin have fallen during the 10-year period about 90 percent—from \$2.50 to 21 cents and from \$3.24 to 36 cents, respectively.

²⁸ Federal Trade Commission, "Economic Report on Antibiotics Manufacture", 1953, p. 230.

²⁹ Federal Trade Commission, *op. cit.*, p. 192.

³⁰ The type of quotation used for the broad spectrums is the price to the druggists for 16 capsules of 250 milligrams each, whereas the quotations used for penicillin and streptomycin are bulk prices. With the exception of sales by Bristol to Upjohn and Squibb there are no bulk sales of broad spectrum antibiotics. After an initial decline, Bristol's prices to Squibb and Upjohn have not fluctuated and of course are not a matter of regular public record.

CHART 10
ANTIBIOTIC PRICES
BROAD VS NARROW SPECTRUM



^{1/} 16 250 mgm. capsules - price to druggists ^{2/} Tetracycline introduced in 1953 ^{3/} 10 grams, bulk price ^{4/} 10 million units, bulk price

SOURCES: Bulk prices of streptomycin - open market quotations, June figure, *Oil Price and Drug Reporter*
 Bulk prices of penicillin - 1951-1955, Lilly prices compiled by FTC.
 1956-1960, Open market quotations, June figure, *Oil Price and Drug Reporter*
 Broad Spectrum - American Druggist, Blue Book.

During the hearings it was emphasized that any increases in costs affecting the broad spectrums should also have affected penicillin and streptomycin:

Dr. BLAIR. Penicillin, streptomycin, and these broad-range antibiotics are all produced, with some modifications, by the same basic production method, except that Chloromycetin is now produced by an even cheaper process, being produced synthetically. This basic method is the fermentation process. From this chart, it is obvious that certain reductions in the cost of production have developed in the use of the fermentation process. Changes in production methods, greater efficiency, lowering costs, have in fact been reflected in lower prices of penicillin and streptomycin, but obviously, to the extent that they occurred in the production of the broad-spectrum antibiotics, have not been manifested in lower prices there.³¹

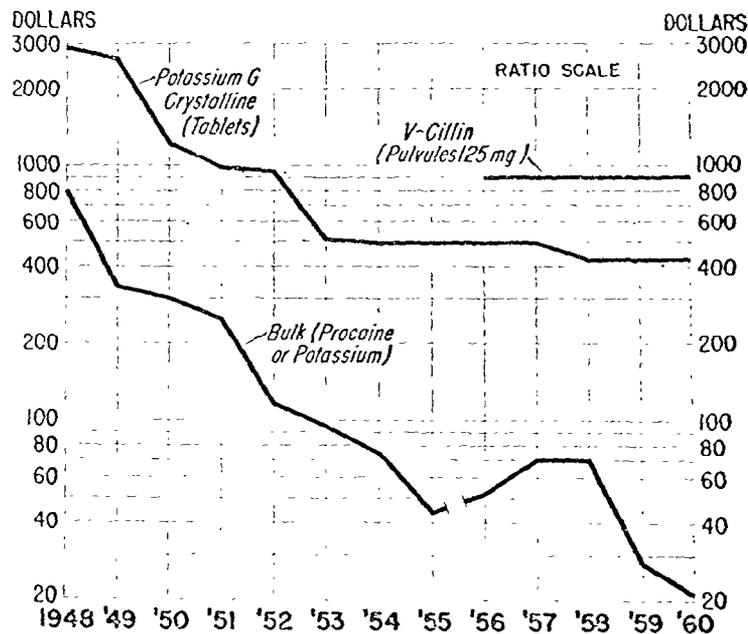
A similar contrast between administered and market-determined prices appears in chart 11, which compares the price trend of one of the newer patented forms of penicillin (V-Cillin), with the trends of the unpatented forms both in bulk and package. All of the prices relate to one company, Eli Lilly. To facilitate comparison they have been expressed on the basis of a common measure, 1 billion units.

As was true of the broad spectrums, the price trend of the patented penicillin is represented since its introduction in 1956 by a straight

³¹ Hearings, pt. 24, p. 13659

CHART II

**PENICILLIN-LILLY
BULK PRICES COMPARED WITH
PRICES TO DRUGGISTS
PER BILLION UNITS, 1948-1960**



SOURCES Bulk 1948-1955, Lilly prices compiled by FTC.
1955-1960, Open market quotations, June figures, *Dr. Point and Drug Reporter*
Dosage Forms 1948, Drug Topics *Red Book*
1949-1960, American Druggist *Blue Book*, annual quotations

line. During that same period Lilly's price of the older type in tablet form declined by 14 percent while the bulk price dropped by 60 percent after an increase. The chart also reveals that up to very recent years the price trend of the older type closely paralleled that of the bulk price, after about a 1-year lag. Such parallelism, however, has recently been conspicuous by its absence, as the bulk price showed a further price decrease between 1958 and 1960 while the tablet price remained unchanged.

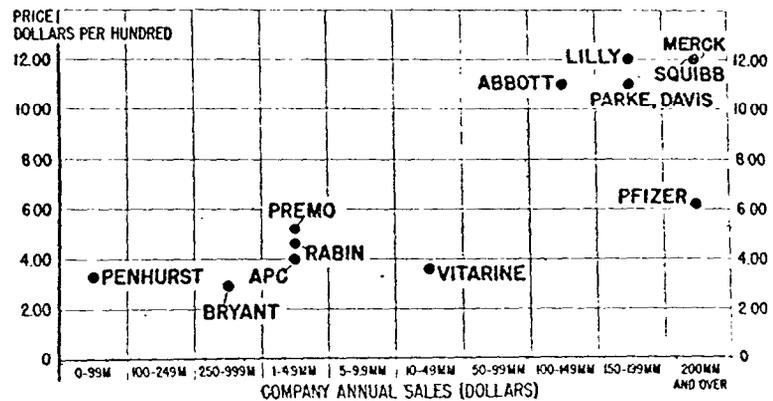
Small manufacturers sell the unpatented penicillin in finished form at prices substantially below those of the major companies. This is evident from chart 12 which shows the price differences between selected small companies and large concerns for penicillin potassium G tab-

CHART 12

PENICILLIN

WHOLESALE PRICES BY SIZE OF COMPANY
1960

POTASSIUM PENICILLIN G, BUFFERED, TABLETS, 250,000 UNITS, 100S



SOURCES: Price, American Druggist (Blue Book, 1960 #1); Size (Company Annual Sales), Moody's Industrial Manual, 1960, and Companies

lets; the horizontal scale is by size of company in terms of its total annual sales of all products. The smallest firm, Penhurst Pharmaceutical Corp., has a price of \$3.30. The lowest price (\$2.95) is that of the Bryant Pharmaceutical Corp., with annual sales of less than \$1 million. Three other small companies whose sales range from \$1 to \$5 million quote prices in the area of \$4 or \$5. In contrast, two of the largest companies, Merck and the Squibb Division of Olin Mathieson, have the highest price, \$12. This is also the price quoted by Lilly while Abbott and Parke, Davis charge approximately a dollar less. Among the majors, Pfizer is a price cutter on this product, selling it for only about half the price charged by the other large companies.

During the hearings, Mr. Seymour N. Blackman of Premo contrasted Squibb's price for penicillin tablets³² of \$14.85 per hundred with his price of \$3.75. On the question of possible differences in quality between the products of large and small companies the following exchange with Senator Hart took place:

Mr. BLACKMAN. All antibiotic products, which would take this particular product within its scope, are controlled by your Food and Drug Administration.

Not only in the usual way products are controlled, that is, by picking up shipments in interstate commerce and examining them for their labeled potency, but the Food and Drug Administration, on antibiotic products, requires that before a pharmaceutical manufacturer releases the product for sale, he must present the sample to the Food and Drug Administration plus an analysis, and the product is not released for sale until the Food and Drug Administration runs their own

³² A different dosage form from the previous example.

parallel analysis and certifies that the product is actually what the label says it is.

So, it is fortuitous that the product which you pick is not only the same because I say so, but it is the same because your Food and Drug Administration says so, and has proved it.

Senator HART. Does the Food and Drug Administration say that both of these meet minimum standards, and does it also express any opinion as to how far one or the other exceeds the minimum?

Mr. BLACKMAN. The Food and Drug Administration will not allow either Squibb or Premo to exceed or come under the requirements. There are definite specifications as to how much penicillin you may have in a tablet. It can't be more or less, within certain limits, of the labeled requirements. These limits are close, and if, for example, we have 1 or 2 percent more penicillin in our tablet than Squibb, it would be inconsequential as far as the therapeutic efficacy of the product is concerned.³³

The price differences among the major companies on unpatented penicillin are not to be found in the patented broad spectrum antibiotics. This is brought out by table 29, which shows for the various dosage forms of tetracycline, Aureomycin and Terramycin, the price to the druggist of each of the sellers.³⁴

TABLE 29.—Identity of prices to druggists—Tetracycline, Aureomycin, and Terramycin

	Tetracycline					Cyanamid Aureo- mycin	Pfizer Terra- mycin
	Cyana- mid Auro- mycin	Pfizer Tetra- cyn	Bristol Poly- cyc- line	Squibb Stein	Upjohn Pan- mycin		
Capsules:							
100 mg. 25's.....	\$3.61	\$3.61	\$3.61	\$3.61	\$3.61	\$3.61	\$3.60
100 mg. 100's.....	13.77	13.77	13.77	13.77	13.77	13.77	13.77
250 mg. 16's.....	5.10	5.10	5.10	5.10	5.10	5.10	5.10
250 mg. 100's.....	30.60	30.60	30.60	30.60	30.60	30.60	30.60
Intramuscular: 100 mg. vial.....	.94	.94	.94	.94	.94	.94	.94
Intravenous:							
250 mg. vial.....	1.62	1.62	1.62	1.62	1.62	1.62	1.62
500 mg. vial.....	2.91	2.91	2.91	2.91	2.91	2.91	2.90
Oral drops: 10.0 mg./cc. 10 cc.....	1.47	1.47	1.47	1.47	1.47	1.47	1.47
Oral susp.: 250 mg./5 cc., 1 oz.....	2.54	2.55	2.54	2.54	2.55	2.55	2.55
Syrup:							
125 mg./5 cc., 2 oz.....	2.54	2.55	2.54	2.54	2.55	2.55	2.55
125 mg./5 cc., 16 oz.....	18.36	18.36	18.36	18.36	18.36	18.36	18.36

Source: FTC, "Proposed Findings of Fact and Conclusions of Fact and Law" (June 1960), p. 375.

For each of the dosage forms the five companies selling tetracycline charge the same price, which also happens to be the price charged by American Cyanamid for Aureomycin and by Pfizer for Terramycin. From the 94 cents which each charges for a 100-milligram vial for intramuscular injection to the \$18.36 for 16 ounces of 125-milligram syrup to the \$30.60 for 100 capsules of 250 milligrams, not a single variation of more than 1 cent among the companies is to be found.

³³Hearings, pt. 14, pp. 5205-5209.
³⁴Hearings, pt. 24, p. 13667.

Similar identity within 2 cents is to be found in the suggested resale prices to consumers.³⁵

TABLE 30.—Identity of suggested resale prices to consumers, Tetracycline, Aureomycin, and Terramycin

	Tetracycline					Cyanamid Aureo- mycin	Pfizer Terra- mycin
	Cyana- mid Achrom- mycin	Pfizer Tetra- cyn	Bristol Polycy- clue	Squibb Steclin	Upjohn Panmy- cin		
Capsules:							
100 mg. 25's.....	\$6.02	\$6.02	\$6.02	\$6.02	\$6.02	\$6.02	\$6.00
100 mg. 100's.....	22.95	22.95	22.95	22.95	22.95	22.95	22.95
250 mg. 10's.....	8.50	8.50	8.50	8.50	8.50	8.50	8.50
250 mg. 100's.....	51.00	51.00	51.00	51.00	51.00	51.00	51.00
Intramuscular: 100 mg vial.....	1.56	1.56	1.56	1.57	1.57	1.57	1.57
Intravenous:							
250 mg. vial.....	2.70	2.70	2.70	2.70	2.70	2.70	2.70
500 mg. vial.....	4.85	4.85	4.85	4.85	4.85	4.85	4.85
Fed. drops 100 mg./cc. 10cc.....	2.45	2.45	2.45	2.45	2.45	2.45	2.45
Oral susp.: 250 mg /5 cc. 1 oz.....	4.24	4.25	4.24	4.23	4.23	4.23	4.25
Syrup:							
125 mg /5 cc. 2 oz.....	4.24	4.25	4.24	4.23	4.25	4.25	4.25
125 mg /5 cc. 16 oz.....	30.60	30.60	30.60	30.60	30.60	30.60	30.60

Source: FTC "Proposed Findings of Fact and Conclusions of Fact and Law" (June 1960), p. 372.

Senator Kefauver inquired of Dr. W. G. Malcolm, president of American Cyanamid, how these identities of price came about:

Senator KEFAUVER. [The table] shows the prices of all the companies, regardless of the size of the order, regardless of the way you use it—capsules, drops, sirup, intravenous—you all have exactly the same prices, and you all suggest the same price for the drugstore to sell to the consumer.

How do you get together? How do you work that out, Dr. Malcolm?

Dr. MALCOLM. Mr. Chairman, Mr. Duncan is the general manager of the Lederle Laboratories Division. Would you kindly permit him to read this statement that he has, which I think will save a great deal of time?³⁶

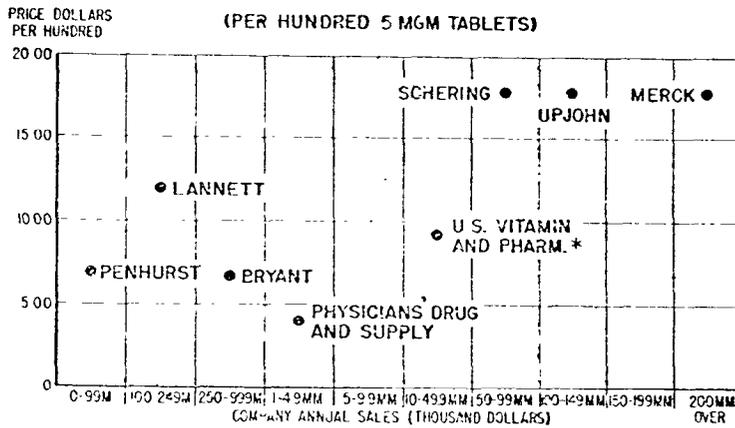
The patent fight over prednisone (and its companion prednisolone) has now been raging at the Patent Office for several years, during which time there has developed a bulk market in the drug somewhat similar to that in the unpatented penicillins. This market has been supplied by small producers such as Syntex and Formet Laboratories, by foreign concerns such as Organon of Holland and also by some of the major companies. As in the case of penicillin, competition in a free market has resulted in a substantial decline in price. Although there are no publicly reported bulk prices for these products, the fact that they have declined is demonstrated by purchase contracts in the subcommittee's files.

The availability of this free supply has made it possible for small manufacturers to sell the "predni" drugs in package form to drugstores and institutional buyers. Again, as in the case of penicillin, substantial differences exist between the prices of the small and the large companies. Charts 13 and 14 contrast for prednisone and prednisolone, respectively, the prices of the leading firms in this area with those of a number of smaller enterprises.

³⁵ Hearings, pt. 24, p. 13568.
³⁶ Hearings, pt. 24, p. 13667.

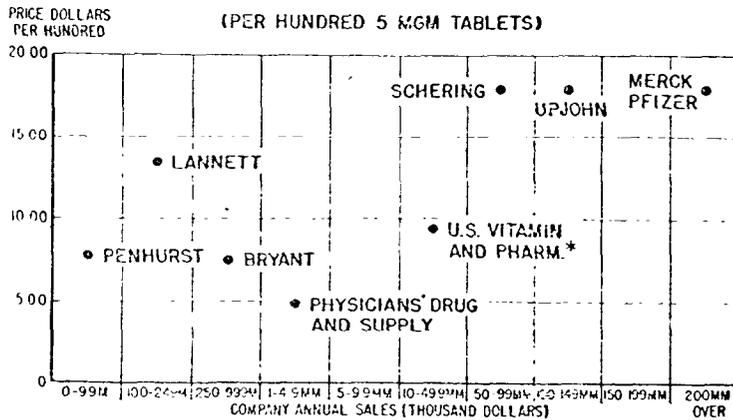
ADMINISTERED PRICES—DRUGS

CHART 13
PREDNISONE
 WHOLESALE PRICES BY SIZE OF COMPANY
 1959



SOURCE PRICES, AMERICAN DRUGGIST BLUE BOOK, 1959-60, AND UPJOHN CATALOG. COMPANY SIZE, MOODY'S INDUSTRIAL MANUAL, 1959, AND COMPANIES.

CHART 14
PREDNISOLONE
 WHOLESALE PRICES BY SIZE OF COMPANY
 1959



SOURCE PRICES, AMERICAN DRUGGIST BLUE BOOK, 1959-60, AND UPJOHN CATALOG. COMPANY SIZE, MOODY'S INDUSTRIAL MANUAL, 1959, AND COMPANIES.

In these products the pricing pattern differs in one respect from that of penicillin; there is absolute price identity among the majors, including Pfizer. Insofar as the difference between large and small companies is concerned, however, the pattern is the same. With total annual sales in the \$1 to \$5 million range, Physicians Drug & Supply has the lowest price for both prednisone and prednisolone. As contrasted to a quotation of \$17.90 by the large companies, this firm offers prednisone for \$4 and prednisolone for \$4.85. Two even smaller firms, Bryant and Penhurst, offer prednisone for \$6.75 and \$6.95, respectively, and prednisolone for \$7.50 and \$7.75, respectively.

Again the question of possible differences in quality between the products of large and small companies arose during the hearings. As an indirect method of shedding light on this question, the subcommittee asked the Food and Drug Administration for information on actions brought since 1955 under the Federal Food, Drug, and Cosmetic Act. From the information provided in Commissioner Larrick's reply of November 4, 1959,³⁷ it is apparent that no legal actions involving corticosteroids have been brought against any of the companies shown on the charts.

The price differences in the "predni" drugs are wholly absent in the later patented corticosteroids. Methylprednisolone (Medrol) is sold exclusively by Upjohn. Triamcinolone is sold exclusively by American Cyanamid (Aristocort) and Squibb (Kenacort), both of whom charge the same price (\$5.65 for 30 tablets). Dexamethasone is sold exclusively by Merck (Decadron), Schering (Deronil), and CIBA (Gammacorten), all of whom have a price of around \$8.10 for 50 tablets.³⁸

SALES TO INSTITUTIONAL BUYERS

In addition to the usual prescription market, substantial quantities of drugs are sold to institutional buyers. In the regular market the customer, being limited to the brand name product usually prescribed for him, has little freedom to shop around for a lower price. This is true even where a product is sold by small manufacturers at prices substantially below those of the major companies. The essential difference between the two markets is that, unlike the physician, the institutional buyers frequently and increasingly have an acute interest in price. Faced with mounting drug costs the institutional buyers, consisting of private nonprofit hospitals, State and local governmental hospitals, clinics and dispensaries, and Federal agencies, are to an increasing extent using generic formularies and are purchasing from qualified suppliers on a price basis. An outstanding example of this market is provided by the U.S. Department of Defense through its procurement arm for medical supplies, the Military Medical Supply Agency. MMSA acts as a unified central purchasing agent for all hospitals and dispensaries operated by any of the armed services; it also purchases on request for the Office of Civil and Defense Mobilization, the U.S. Public Health Service and, under the military assistance program, for allied nations.³⁹

MMSA is required to purchase drugs by generic names at the lowest possible price from what are termed any "qualified suppliers." To provide the best possible medical treatment for patients, who may range from the newest Army recruit to Members of Congress and the

³⁷ Hearings, pt. 15, p. 8359.

³⁸ Merck's Decadron is sold at a price of \$10.11 for 100 tablets of 0.75 mgm.

³⁹ Hearings, pt. 24, p. 1877.

President, MMSA insists that suppliers meet exacting standards. Not only must the quality of the particular product being delivered conform to rigid specifications but inspection is made of the supplier's entire operation including the "housekeeping" facilities of his plant, his production and quality control techniques and performance, his records system, the technical proficiency of his staff, and the competency and knowledge of the management itself.⁴⁰ In short, every effort is made to assure that any company, large or small, which sells drugs to MMSA is capable of providing pharmaceutical products of fully acceptable quality. Given quality, MMSA endeavors to fill its requirements at the lowest possible cost.

The agency has provided the subcommittee with a complete record of its contracts, dating back as far as 1954, in a variety of areas (antibiotics, sulfa drugs, polio vaccine, steroids, insulin, tranquilizers, and vitamins). Here, also, a sharp differentiation between administered and market-determined prices emerges. The differentiation exists not only among drugs as a whole but within given product groups which are characterized by a general similarity of production methods and thus of costs.

MMSA has had little success in securing price concessions in the patented broad spectrum antibiotics. A case in point is Chloromycetin available only from Parke, Davis. From May 1954 to February 1958, MMSA negotiated 16 contracts with the company; despite a wide variation in quantities, the price was rigid at \$12.50 per bottle.⁴¹ In April 1958, MMSA's purchase officer persuaded Parke, Davis to reduce the price to \$11.25; from that date through June 1959 there were 11 additional procurements—all at this same price, although there was again a wide range in quantities.

A similar pattern is presented by Aureomycin, also available only from a single supplier, American Cyanamid. From May 1954 to February 1956, MMSA made nine procurements in widely varying quantities, all at a price of \$12 per bottle.⁴² In April 1956 the price was reduced but only to \$11 a bottle, which has prevailed for 11 procurements of widely varying quantities.

MMSA has had its greatest procurement difficulties with tetracycline, which is sold by five companies, though one of them (Upjohn) has not sought MMSA orders. Rear Adm. William L. Knickerbocker, USN, executive director of MMSA, described to the subcommittee his experience in trying to secure lower prices for this important drug:

When the Government first purchased these tablets, it paid \$11 per bottle of 100 in a procurement involving 94,176 bottles. Six months later in May 1957, the unit price (from a different supplier) was still \$11, even though the quantity purchased was about one-seventh that of the previous procurement. On the third procurement, 9 months later, the price rose, inexplicably, to \$17.24—a 57-percent increase over the previous \$11 price. As a matter of fact, in this latter procurement the low offeror refused to take more than one-half the quantity required by the Government, and the remainder had to go to the second low offeror at a price of \$19.19 per bottle—or an increase of 74 percent over the initial low price.

⁴⁰ Hears, pt. 21, pp. 11547 ff.
⁴¹ 100-m capsules in bottles of 100.
⁴² 100-m capsules in bottles of 100.

During 1958 there were 3 additional procurements of tetracycline hydrochloride for 93,476, 41,904, and 25,632 bottles, respectively. For the first two of these procurements, the price remained at \$17.24 and for the third it was \$17.15. In June 1959, it seemed that this price "freeze" finally had been broken when the Government was able to buy 46,512 bottles at a unit price of \$14.36. But no. This "thawing out" process was illusory, because 2 months later, in August 1959, a solicitation for 28,000 bottles again produced an offered low price of \$17.15 with 3 suppliers offering the identical price. This was the same price as quoted before the so-called price break. When this occurred, MMSA felt that it had no alternative but to cancel the procurement because of the unreasonably high price.

Over a period of 3 years, four independent suppliers participated in the Government procurement of this item. Nevertheless, in that time the price rose to a high of 174 percent of the initial low price, and, thereafter, with one exception, became constant in the \$17 bracket. Moreover, all price quotations to the Government bore no relationship to the quantities ordered * * *.

Aside from the foregoing peculiar pattern of cost to the Government, there are other characteristics in the procurement history of tetracycline hydrochloride tablets which should be noted. On a number of procurements, more than one supplier initially offered the identical low price. Furthermore, even when only one supplier was low, others came in at higher but identical prices (i.e., either the specific prices offered were the same, or they became identical when the prompt payment discount was applied).⁴³

While Admiral Knickerbocker refused to hazard any guess as to the reason for this strange price behavior, an explanation was proffered by Mr. Lyman Duncan, manager of the Lederle Laboratories Division of American Cyanamid. According to his testimony the first MMSA tetracycline procurement was announced at a time when Mr. Duncan was still learning the drug business (shortly after his transfer to Lederle from Cyanamid's Organic Chemicals Division). As a result, he made a mistake and simply bid for the tetracycline contract at the same \$11 price at which Cyanamid had been supplying Aureomycin to MMSA for some months:

As I recall the circumstances, up to that time I think the buying had been entirely Aureomycin or Terramycin with some Chloromycetin, but the real competing products there were Aureomycin and Terramycin.

Now what happened there was I was not fully aware of this, being new in the business, that the Army had never before bought tetracycline.

⁴³ Hearings, pt. 24, p. 13779-80.

ADMINISTERED PRICES—DRUGS

It was brought to my attention that they had an order for tetracycline. Well, I guess I did not give it a great deal of consideration.

* * * * *
 So far as I can remember when this came up, I said: "Well, I suppose we have been bidding \$11 on Aureomycin. It is too low a price, but I guess we might as well bid the same price."⁴⁴

Mr. Duncan's uncertainty as to what Lederle should charge for tetracycline is surprising in view of the fact that for a full 2 years prior to the MMSA procurement, his company had been selling the same product to the Veterans' Administration at a price of \$19.58, less 2 percent for prompt payment.⁴⁵

On the second procurement Pfizer apparently made a "mistake" in bidding \$11 on the assumption that Cyanamid would be in that range. Since Cyanamid actually bid \$19.58, the contract of course went to Pfizer. Thereafter, prices rose as described by Admiral Knickerbocker. As the subcommittee counsel pointed out: "I notice that \$11 mistake never occurred after the first two times."⁴⁶

In a discussion of subsequent identical bids by several companies, Mr. Duncan was asked specifically about the MMSA procurement in September 1958, for which Cyanamid, Pfizer, and Squibb all bid \$17.24; he explained that this was a coincidence which "astounded" him.

I had not the faintest idea, Mr. Dixon—it is very easy looking back, but in looking ahead, I had not the faintest idea. Actually, I was astounded that they bid \$17.24. I expected someone to bid, with a different situation, to bid \$15 or \$16. I had no idea what those bids would be.⁴⁷

Another "astounding" coincidence is the mathematically precise division of the MMSA market for tetracycline. For the 3-year period, November 1956–October 1959, the patent-holder, Pfizer, had 46.6 percent of the MMSA purchases of this drug.⁴⁸ The remaining 53.4 percent was split almost exactly evenly among the other sellers, with the Lederle Division of American Cyanamid getting 17.8 percent, Bristol 17.6 percent, and Squibb 17.5 percent. (See table 31.)

TABLE 31.—MMSA procurement of tetracycline, all forms, November 1956–October 1959

[In dollars]

	Pfizer	Lederle	Bristol	Squibb	Upjohn	Total
Tetracycline hydrochloride:						
Tablets, 250 milligram	3,572,922	1,397,149		1,330,219	42,000	6,342,290
Oral suspension	178,434		1,377,335	86,298		1,642,067
Powder, 250 milligram	56,171	7,540	74,313	33,408		171,432
Powder, 100 milligram	41,153	67,923				112,076
Total	3,851,642	1,472,611	1,451,648	1,449,925	42,000	8,267,826
Percent	46.6	17.8	17.6	17.5	.3	100.0

⁴⁴ See MMSA (Sept. 2, 1960).

⁴⁵ Hearings, pt. 24, p. 13700.

⁴⁶ Veterans' Administration purchase records provided to the subcommittee.

⁴⁷ Hearings, pt. 24, p. 13691.

⁴⁸ Hearings, pt. 21, p. 13592.

⁴⁹ Hearings, pt. 24, p. 13700. Upjohn obtained only a very small procurement, amounting to only 0.3 percent of the total.

The division of the business in the two principal products, 250-milligram capsules and tetracycline for oral suspension, represents at the least an unusual coincidence. Pfizer supplied approximately 60 percent of MMSA's dollar purchases of tablets, while the remaining percentage was divided almost exactly evenly between Lederle and Squibb; none was furnished by Bristol. On the other hand, Bristol supplied the greater part of MMSA's requirements for the drug in oral suspension form, with relatively modest participation by Pfizer and Squibb and none at all by Lederle.⁴⁹ This division of the oral suspension contracts cannot reflect any form of product specialization. Bristol, of course, makes tablets, while Pfizer, Lederle, and Squibb sell the oral suspension form to the regular trade and, indeed, entered bids on it during this period to the MMSA.⁵⁰ What is most unusual is that the dollar volume of Bristol's oral suspension sales to MMSA is almost identical to the dollar shares of Lederle and Squibb in the procurement of tablets in which Bristol has not participated successfully.

Just as there is a sharp difference in the price structure between the broad spectrum antibiotics and the older penicillins in sales to the regular drug trade, so also is there a similar difference in sales to the Military Medical Supply Agency. As has been noted, penicillin G is sold to the retail druggist by most of the large companies at around \$12 a bottle, with small companies quoting as low as \$3.30.⁵¹ In contrast to these prices, MMSA's first reported procurement was a negotiated contract with Bristol calling for a series of deliveries in 1954 at a price of \$1.61 a bottle. Since 1956, procurements have been made for the most part on an advertised bid basis, with small as well as large companies participating, and prices have declined sharply. Since early 1959 the price to MMSA has ranged between 67 and 77 cents a bottle.

Another unpatented antibiotic is bacitracin, most often administered in topical ointments. Typical of the major companies, the price to the druggist for Pfizer's product is \$10.20 a package.⁵² With as many as eight firms of varying sizes bidding in individual procurements, the price has been \$2.35 or less except for a few months in 1956. Seven of the contracts have been won by Pfizer, itself, at bids between \$1.65 and \$1.99 a package, while on five other occasions Pfizer has been unsuccessful with bids below \$2 a package.

As in sales to the drug trade, the large manufacturers of prednisone and prednisolone encounter price competition from small companies. MMSA has made a number of procurements of these products, with from 8 to 15 qualified suppliers, both large and small firms, bidding on each. On none of the procurements did the bids, even by large firms, remotely approach the \$170 paid by the retail druggist for the major brand-name itetas.⁵³ Further, under the pressure of competition the trend of prices has been steadily downward. The first prednisone procurement by MMSA reported to the subcommittee,

⁴⁹ MMSA reported procurements of tetracycline for oral suspension in 1957, 1958, and 1959. Only Bristol had successfully in 1957 and 1958. In 1959, Pfizer was the sole bidder in the table for Pfizer and Squibb for the two 1959 procurements, which reflected a later stage of monopoly of sales. Bristol's 1958 price for \$1.61 a bottle. In June 1959 Pfizer had \$1.67 a bottle, Bristol \$1.60, and Lederle were in the \$1.60 to \$1.67 range. But in December it was Squibb which had \$1.52, while Pfizer's took up with Lederle's bid for the \$1.62 \$1.67 range.

⁵⁰ MMSA purchase records and American Druggist Blue Book.

⁵¹ American Druggist Blue Book, 1959.

⁵² Drug Topics Red Book. Clotment containing 500 units of bacitracin per gram, sold to the druggist in packages of a dozen 1/2 or one tubes.

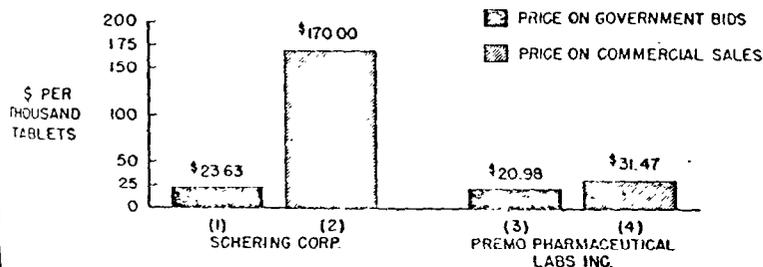
⁵³ 250-milligram tablets, bottles of 1,000.

March 1958, went to Chase Chemical Co. for \$41.50; Schering, one of the largest sellers, bid \$79.74. The last reported procurement, January 1960, was awarded to Premo Pharmaceutical Laboratories at a price of \$11.79 per bottle of 1,000 tablets. By the time of the same procurement, Schering had reduced its bid price to \$17.97—or approximately one-tenth of the price for which it sells the identical product to the retail druggist.⁵⁴

The contrasting price structures of large and small companies are illustrated by chart 15, which shows prices to the commercial trade and to MMSA of Schering and Premo; the period is February 1959, which is about halfway through MMSA's experience in procuring prednisone.

CHART 15

**SCHERING AND PREMO
PRICES ON GOVERNMENT BIDS
AND ON COMMERCIAL SALES
PREDNISONE
PRICE PER THOUSAND 5 MG. TABLETS**



- (1) SCHERING'S BID TO MILITARY MEDICAL SUPPLY AGENCY, FEBRUARY 1959.
 (2) SCHERING'S PRICE TO DRUGGISTS (AMERICAN DRUGGIST BLUE BOOK, 1958-59).
 (3) PREMO'S BID TO MILITARY MEDICAL SUPPLY AGENCY, FEBRUARY 1959, CONTRACT AWARDED TO PREMO.
 (4) PREMO'S ESTIMATED PRICE TO DRUG STORE BASED ON ABOVE BID PLUS ITS NORMAL SELLING AND DISTRIBUTION EXPENSES AND NOMINAL PROFIT (LETTER TO SUBCOMMITTEE, OCTOBER 27, 1959).

In this particular instance, Premo outbid Schering (\$20.98 versus \$23.63). But what is more important is the fact that Premo's price to the commercial trade, \$31.47, was only 50 percent above its bid price, whereas Schering's commercial price, \$170, was 620 percent above its MMSA bid. Commenting on the difference between the commercial prices of large and small companies, Mr. Francis Brown, president of Schering, stated: "I have no doubt, Senator, that our overhead is 8 to 10 times the overhead of any of these smaller companies."⁵⁵ If the difference between their commercial and their

⁵⁴ The last reported prednisone procurement, January 1960, was given to Pansey Corp. at a price of \$11.79 per bottle of 1,000 tablets. Interestingly, Parke, Davis, Pfizer, and Schering were all bidding in the procurement, a marked contrast to the \$170 paid by the retail druggist for the identical product offered by the same companies. A year later, January 1960, the last reported procurement went to Premo at a price of \$12.10 per 1,000—just about one-twelfth of the price for major brands to the retail druggist. *Drugs*, pt. 14, p. 7593.

MMSA prices could be regarded as a rough measure of "overhead" (assuming similar profit rates), Mr. Brown's estimate in this particular case is somewhat low: Schering's overhead would be 14 times that of Premo.

The patented tranquilizers purchased by the MMSA—meprobramate, promazine, and chlorpromazine—have been offered at rigid prices only 25 to 35 percent below the price to the retail druggist. Reserpine, on the other hand, although developed by CIBA Pharmaceutical Co., has been widely licensed. Some 20 sellers have made bids at one time or another, with as many as 14 firms bidding in a single procurement. MMSA's first reported procurement, February 1956, was won by Eli Lilly with a bid of \$1.39 per bottle of 1,000, which is one twenty-fifth of Lilly's price to the druggist. Since that time MMSA's reserpine price has steadily fallen. In February 1959, CIBA won a contract with a bid of 60 cents a bottle (only 1.5 percent of CIBA's price to the retail druggist of \$39.40).⁵⁶ And by the date of the last reported procurement, April 1960, the price had dropped to 51 cents a bottle. MMSA was buying 1,000 tablets at about the cost of 15 tablets to the civilian druggist. On one or more occasions, each of the four major sellers of this product—CIBA, Lilly, Squibb and Merck—made bids which were less than one-twentieth of their price to the retail druggists.

The Military Medical Supply Agency's experience for more than a year in buying drugs is summarized in the attached scatter diagram. Chart 16 was prepared from data for 44 products purchased in significant quantities by MMSA during 1959 and early 1960. In each case the lowest price at which MMSA was able to buy during the period has been expressed as a percentage of the price to the retail druggist for the same product sold under the brand names of the large companies.⁵⁷ Inasmuch as the average sale is substantially larger and advertising and selling costs are considerably less on sales to MMSA, it is to be expected that prices to the Government will be noticeably lower than on sales to the retail druggist. What is of interest here is the extent of the difference as among products with differing numbers of bidders.

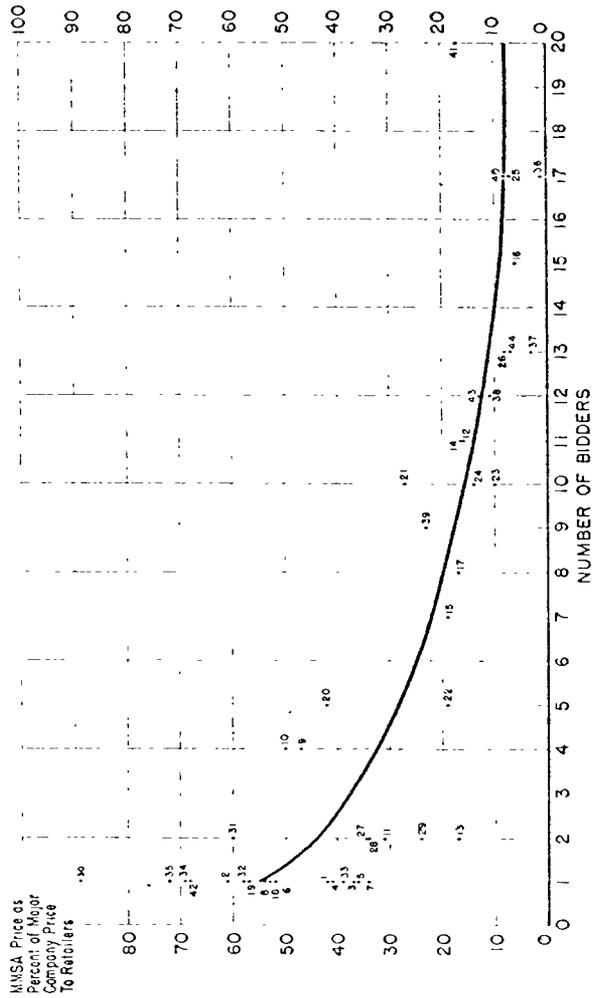
The scatter diagram clearly shows the existence of an inverse relationship between MMSA prices and the number of bidders; the greater the number of available suppliers, the lower the price.⁵⁸ A freehand curve has been fitted to the plotted points to show the approximate relationship between MMSA prices and the number of bidders for contracts to supply the various products. It will be observed that the curve tends to fall sharply as the number of sellers rises—i.e., the effectiveness of competition in reducing prices when drugs are purchased by generic name is clearly illustrated. When its sources of supply are limited to a single firm or a very few companies, MMSA's procurement advantage over the retail druggist is far smaller than is the case when 10 or 12 firms are competing for the agency's

⁵⁶ See *ibid.*, pt. 16, p. 9130. Mr. T. F. Davies Haines, president of CIBA's U.S. subsidiary, testified: "When we bid 60 cents for bottles of 1,000 here, we didn't try to do anything like recover our cost of production. . . . In retrospect, it was perhaps a mistake that we did that. . . . If this is correct, it is a very surprising price to bid in MMSA's procurement of March 6, 1959, CIBA bid 58 cents per 1,000 tablets of CIBA 1959 the exact price bid by Lilly, incidentally, in neither of these cases CIBA the low bidder."

⁵⁷ In the case of tetrahydrocannabinol, the lowest domestic price was \$1. In December 1959 MMSA made a contract on Fiamphol (Ciba-Geigy) at \$1.50 per 100, less than half of the lowest price (\$3.00 per 100 tablets) bid on this contract by a domestic manufacturer.

⁵⁸ The number of "available suppliers" has been considered to be the number of firms which actually entered bids for MMSA contracts during the period covered by the tabulation. See appendix B, table A-13 for identification of products.

CHART 16
MMSA DRUG PROCUREMENT
 RELATIONSHIP OF NUMBER OF BIDDERS TO MMSA PRICE EXPRESSED
 AS PERCENT OF COMMERCIAL PRICE, 1959 AND EARLY 1960



SOURCE: MMSA purchase records and American Drug Retailer Board.

contracts. The curve appears to break definitely at about five sellers. With fewer sellers the difference between the MMSA price and the commercial price may be noticeable, but arbitrary; with more sellers, a fairly uniform pattern of relatively low prices appears. The inverse relationship can also be seen in the following summary tabulation.

TABLE 32.—Number of suppliers compared to lowest MMSA price expressed as percentage of major brand prices to retail druggists—44 drug products (1959 and early 1960)

Number of bidders during period	Number of products in percentage groups					Total
	0 to 15 percent	16 to 30 percent	31 to 45 percent	45 to 60 percent	Over 60 percent	
1 to 4.....		2	9	9	4	24
5 to 9.....		4	1			5
10 or more.....	11	4				15
Total products.....	11	10	10	9	4	44

Source: MMSA purchase records and American Druggist Blue Book, 1959-60.

In 15 of the 44 products MMSA contracts were sought by 10 or more companies. On more than two-thirds of these products MMSA was able to secure prices which were only 15 percent of the prices charged to the commercial trade for principal brands. The remainder were also "bargains," being purchased at prices only 16 to 30 percent of the prices to the regular trade. In contrast, concessions of this magnitude were obtained only on 2 of the 24 drugs for which there were from 1 to 4 bidders. These two were erythromycin capsules and insulin isophane injectible; on both, the MMSA price level was set by the same firm, Eli Lilly.⁵⁹

On none of these concentrated 24 products did MMSA pay as little as 15 percent of the commercial price, although it obtained concessions of this magnitude on more than two-thirds of the products in which there were 10 or more bidders. On 9 of the 24 concentrated drugs MMSA had to pay about half of the commercial price; for 4 more it had to pay from 60 to 90 percent of the price to the trade.

In trying to obtain what it regards as reasonable prices for drug products, the MMSA has encountered resistance by the industry to a procedure accepted by other industries. Procurements involving products available only from a single supply source or from a small group of companies are not unknown for other industries. Admiral Knickerbocker pointed out that when confronted with such situations, purchase officers are directed to obtain cost breakdown from suppliers.⁶⁰ Although many companies outside of the drug industry have accepted this procedure as a basis for negotiation over price, the drug companies, with one exception,⁶¹ have refused to cooperate with MMSA. According to the Admiral:

⁵⁹ Lilly was the only supplier of isophane insulin from 1952 through 1954, charging approximately one-fourth of the price to the druggist, since 1954 Squibb has secured MMSA contracts, but only by bidding in Lilly's range. Similarly, on the first erythromycin procurement (100 mgm. capsules), one of the two bulk manufacturers, Abbott, bid \$12.32 per 100 capsules, while Lilly offered to supply them at \$4.31 per 100. As in the case of the insulin, Lilly has kept its erythromycin prices at a reasonable level, which Abbott has been forced to meet on MMSA contracts.

⁶⁰ Since the drug and pharmaceutical products sold by the industry to MMSA are the same as the commercial "shelf" items sold to the civilian market, Government contracts for these products are excluded from statutory renegotiation provisions.

⁶¹ Armour Pharmaceutical Co., Kansas, Ill.

The Armed Services Procurement Regulation urges that, where a question arises as to whether the offered price is fair and reasonable, steps should be taken to resolve that question by obtaining a cost breakdown or price analysis from the potential contractor.

The Navy Department has negotiated the purchase of billions of dollars of supplies and has obtained from suppliers cost and price analyses by which a determination could be made that the prices offered to the Government bore a logical relationship to the contractor's overall costs. *This is not our experience, however, with the drug and pharmaceutical industry.* Generally, MMSA has been unable to obtain such cost analyses from its suppliers, and there is no way under the present law in which these suppliers can be required to produce such analyses if they are confident they can sell their products without doing so.⁶²

The relationship between fewness of suppliers and price was concisely pointed up in the testimony of Dr. E. Gifford Upjohn. Upjohn's Orinase (tolbutamide) was the only oral antidiabetic drug purchased by MMSA during the period for which reports are available. As the sole supplier, Upjohn charges the Government 90 percent of the price to the direct-buying retailers.⁶³ When Upjohn competes against other suppliers, however, the company is both willing and able to lower its prices considerably.

Mr. DIXON. The record shows, in our previous hearings, that when you won the bid on hydrocortisone tablets, 20 milligram tablets in bottles of 100 on May 22, 1958, your bid to MMSA was for \$4.63 a bottle. The price to the druggist for that same bottle would have been \$18.64. On cortisone acetate tablets, Upjohn bid as low as \$1.86, almost meeting Meck's winning bid which was for \$1.85 for 20 milligram tablets in bottles of 40. This was 1956 and your price to druggists was \$6.56 * * *.

* * * * *

On the items I talked about you had competition?

Dr. UPJOHN. I expect you are right.

Mr. DIXON. You did not have any competition on Orinase because you were the exclusive manufacturer?

Dr. UPJOHN. That is right. If they specify our product then it would be filled with our product; that's right.⁶⁴

THE DETERMINATION OF PRICE

In previous hearings the subcommittee has concerned itself with the standards employed by large corporations in concentrated industries to establish prices. This important issue, which has received considerable attention in economic literature, was also examined during the course of the drug inquiry. In the other industries examined by the subcommittee—steel, automobile, and bread—price leadership

⁶² *Hearings*, pt. 24, pp. 13759-13760 (emphasis added).

⁶³ Testimony of Dr. E. Gifford Upjohn, *hearings*, pt. 20, p. 11057.

⁶⁴ *Ibid.*, p. 11058.

was found to be generally observed.⁶⁵ Even though they might be more efficient, have lower costs, and show higher profit margins, companies in those industries tend to change their prices only after the leader has changed.

The same practice has been found to prevail in the drug industry, with, however, an important further dimension. This is the extension of the principle to the introduction of new drugs. In an industry such as steel, price "followership" usually takes the form of matching the leader's prices on the industry's existing products. In drugs the practice is followed not only on existing products but on new drugs as well. When a new product is put on the market, the customary procedure is to introduce it at or very near the price charged for an existing drug used to treat the same general type of ailment. Inasmuch as most ailments are treated with a drug of some kind, there is usually no great difficulty in finding a product whose price can be matched. The practice, which is referred to by industry representatives and their legal spokesmen as "meeting competition," is the essence of simplicity; this, incidentally, makes it rather irrelevant to speculate on the complex of variables that businessmen might have in mind in setting their prices. Whether so intended or not, the practice has the effect of automatically eliminating price rivalry. As long as a new drug is introduced at the same price as its predecessor, the manufacturer of the older drug is not faced with the necessity of lowering his price, which in turn might provoke a further price reduction of the new product, culminating in "disastrous" competition.

The broad spectrum antibiotics provide a striking example of the manner in which "meeting competition" resulted in price identity on different, though competing, products, as well as among the different sellers of a given product. Less than 3 years after the introduction of the first of these antibiotics, the price of each of the three broad spectrums then on the market, Aureomycin, Terramycin, and Chloromycetin, had been stabilized. On September 27, 1951, Pfizer adopted a price of \$5.10 for Terramycin;⁶⁶ 4 days later both American Cyanamid and Parke, Davis announced the same price for Aureomycin and Chloromycetin, respectively. A little more than 2 years later American Cyanamid became the first company to introduce the new broad spectrum, tetracycline; the price which it adopted was the same as that of the earlier broad spectrums, \$5.10. Shortly thereafter the four other sellers of tetracycline put their products on the market at the same price.⁶⁷

The corticosteroids provide a similar case in point. Describing the manner in which Schering arrived at the prices for Meticorten and Meticortelone (its brands of the "predni" drugs), Dr. Upjohn testified:

When prednisone and prednisolone came out they had to be priced in respect to the then existing competition, which was hydrocortisone and cortisone. So the price level selected for those originally by Schering was obviously based on the corresponding price of those other commodities.⁶⁸

⁶⁵ 55th Cong., 2d sess., S. Rept. No. 1357, "Administered Prices: Steel, Report of the Senate Subcommittee on Antitrust and Monopoly," 1938, pp. 73-106; 55th Cong., 2d sess., "Administered Prices: Automobiles, Report of the Senate Subcommittee on Antitrust and Monopoly," 1938, pp. 52-75; 56th Cong., 2d sess., S. Rept. No. 1923, "Administered Prices: Bread," 1960, pp. 146-178.

⁶⁶ 15 capsules of 250 mgm.

⁶⁷ Federal Trade Commission, "Economic Report on Antibiotics Manufacture," 1953, p. 192.

⁶⁸ Hearings, pt. 14, p. 8208.

The "predni" drugs in turn became the basis for the pricing of the more recent corticosteroids. In 1957 Upjohn introduced methylprednisolone under the trade name, Medrol. During the same year Squibb and Lederle introduced triamcinolone under the respective trade names, Aristocort and Kenacort. All were introduced at the price charged by Schering for Meticorten and Meticortelone, 18 cents a tablet to the druggist.

A third advantage is that the steady advance in science and technology frequently makes it possible for the new product to be produced more cheaply than its predecessor. The most dramatic savings occur when the new product is of an entirely different character and can be produced by much simpler processes. An example is the substitution of the oral antidiabetic drugs for insulin. These are synthetic chemicals which can be produced at little cost. As has already been shown, the computed production costs for Orinase are only 0.7 cent per tablet, and including royalty only 1.3 cents. This compares to a price paid by the druggists of 8.3 cents and by the consumer of 13.9 cents. Although the cost of production of insulin is not known, there can be little doubt that it is well above this figure. The essential raw materials, pancreas, must be purchased from slaughterhouses and are undoubtedly more expensive than the basic chemicals from which the oral forms are made. In Great Britain it was found that, "The cost of pancreases is an important item in the cost of insulin, representing in recent years approximately 45 percent of factory costs".⁶⁹ Refining and purification, quality control, are all exacting steps. On what basis then was the price of Orinase, the first of the oral antidiabetic drugs, arrived at? In his testimony before the subcommittee, Dr. E. Gifford Upjohn, president of the Upjohn Co., stated that the price for Orinase was determined by the market price for insulin. The following exchange occurred:

Mr. DIXON. How did you arrive at your price on Orinase in this country?

Dr. UPJOHN. Well, that was arrived at on the basis of competition of course. Diabetic patients can be treated by diet or by insulin.

Senator KEFAUVER. What?

Dr. UPJOHN. With insulin, and insulin had been on the market for many years, during which time its price had come down very markedly, and even though the price of insulin was at quite a low level, it was necessary for us to consider that as our competition. So in arriving at any price you consider what the competitive situation is going to be.

Now the competition does not necessarily fix the point at which the pricing will be made, because there are other things to be considered, such as competitive advantages that one might have.

Mr. DIXON. You stated then, if I understand you correctly, that when you established this price, you took into consideration the competitive product insulin?

Dr. UPJOHN. Yes, sir.

Mr. DIXON. And you figured that the price you set was a competitive price with insulin?

⁶⁹ The Monopolies and Restrictive Practices Commission, "Report on the supply of Insulin," 1952, p. 28.

Dr. UPJOHN. That is right.

Mr. Dixon. Figuring this out on a dosage formula, we understand that a diabetic who can shift from insulin to an oral drug normally is one who must take 30 units of insulin daily, usually 10 units shortly before each meal. Regular insulin is sold in 10 cubic centimeter vials containing 40 units per cubic centimeter or a total of 400 units per bottle. According to the Blue Book, the price to the consumer is \$1.40, and, as I stated, I believe that price has been unchanged since 1947. Thus, every time the patient gives himself an injection of 10 units of insulin, the cost of the drug to him for such injection is about 14 cents. This is the same price also for an Orinase tablet, I believe.

Senator KEFAUVER. Apparently you priced it just about the same as the injectible insulin, as I understand your testimony. Maybe it is a little different, but just about the same.

Mr. UPJOHN. Senator, that would be a very difficult thing to say one way or another because there are so many variables.

Senator KEFAUVER. The point is, isn't insulin in injectible form a much more expensive product to manufacture than a tablet of oral insulin? I understood the injectible insulin had to be made out of animal pancreas of which there is a shortage, and it is a very difficult process, whereas Orinase is a chemical combination which is comparatively much cheaper and much easier to make.

Dr. UPJOHN. I haven't any information about that at all. I don't know anything about the production costs of insulin. We do not manufacture insulin.

Senator KEFAUVER. But it is true that insulin is made out of the pancreas of animals?

Dr. UPJOHN. That is right.

Senator KEFAUVER. In setting your price, it would seem that you were bringing out a new product which is to take the place of insulin in certain limited cases where it can be used. It would seem that instead of trying just about to match the price of a product already on the market, that if you had a lower manufacturing cost—it would cost you less, it would be less expensive to manufacture—you would bring your price down and thereby gain some advantage by having a lower competitive price.

Dr. UPJOHN. You asked me how the price of insulin was set.

Senator KEFAUVER. No.

Dr. UPJOHN. I mean how the price of Orinase was fixed.

Senator KEFAUVER. My question was, Why didn't you set Orinase at a lower price? Why did you just set it the same as insulin which was already on the market?

Dr. UPJOHN. That was our competition, Senator.⁷⁰

⁷⁰ Hearings, pt. 20, pp. 11037-11052.

A somewhat similar cost-saving innovation took place in the production of Chloromycetin. In its early history it was discovered that Chloromycetin could be manufactured not only by the fermentation process used in the production of other antibiotics but by a cheaper synthetic chemical process. To use the chemical process, Parke, Davis constructed a new plant, and since that time, most if not all of its output has been produced by the synthetic chemical process. While its cost advantage may have narrowed with the increase in yields of the fermentation process, Chloromycetin has at no time been sold at a price below that charged for the other broad spectrums, all of which are produced by the fermentation process.

Another case in point is the discovery by Upjohn in 1952 of the microbiological process of producing corticosteroids. Up to that time the manufacture of these products had been an expensive and complex undertaking. The starting raw material of the older method had been oxbile, which required hundreds of slaughtered animals to yield a few grams of cortisone. Moreover this could be secured only by a complex chemical process which originally took 37 steps and as late as August 1952 still required 20.⁷¹ The effects of the new process on costs were two-fold; to reduce the steps involved in production from 20 down to 1 and to open up a relatively inexpensive and abundant vegetable source of supply in place of the costly and restricted supply of oxbile. In a letter dated August 28, 1957, to Mr. John McKeen, president of Pfizer, Dr. Upjohn referred to the new method as constituting "the most economical and versatile steroid processes presently available anywhere in the world today."⁷² In contrast Dr. Upjohn described the older process in these words:

Now oxbile is not a readily available commodity on the market in large quantities. It was scarce. It was expensive. The process * * * had some 40 steps or more. It was an extremely complicated chemical synthesis, as you have said. The costs of the material were very high.⁷³

Yet neither when Upjohn in 1952 introduced its brand of hydrocortisone (Cortef), nor when in 1955 it introduced its brands of the "predni" drugs (Deltasone and Delta-Cortef), nor when in 1957 it introduced methylprednisolone (Medrol) did Upjohn's price ever depart from that of its "competition," part of which was produced by the older and more costly process.

By being introduced at its predecessor's price, a new drug may tend to enlarge the margin between production costs and price in still another way. This is where the active ingredient is more "potent," which reduces the quantity required. Thus, when the Lederle Division of American Cyanamid introduced a new form of tetracycline, Declomycin, it was priced at the same level as Cyanamid's older form, Achromycin, although its content of active ingredients had been reduced by 40 percent. Referring to the fact that Declomycin and Achromycin are sold to the druggist at around 30 cents and to the

⁷¹ Chemical Week "Cortisone Quest: The Right Process Bug," August 23, 1952.

⁷² *Drugs*, pt. 14, p. 8291.

⁷³ *Drugs*, pt. 14, p. 8292.

consumer at 45 cents a capsule, Mr. Seymour Blackman, executive secretary of Premo Pharmaceutical Laboratories, said:

Declomycin is a 150-milligram capsule, whereas tetracycline is a 250-milligram capsule. The cost for Declomycin should be 60 percent that of the cost of tetracycline capsules * * *. If Premo were allowed to sell the tetracycline drug; that is, if we had not already been refused a license, we could offer this very same product, to the pharmacists, at approximately 9 cents per capsule and it would retail to the consumer for 18 cents giving the pharmacists a legitimate markup and the consumer a legitimate cost.⁷⁴

The practice of the drug companies in using the increased "potency" of new products as the basis for promotional campaigns was strongly criticized before the subcommittee by Dr. Louis Lasagna of Johns Hopkins University:

Now for the parade of steroids--let me put it this way. In coming up with one new steroid after another, I think various pharmaceutical firms have tried to enlist doctors' support by one of two devices. The first is what I like to call the pharmaceutical numbers racket. This is where a compound is alleged to be better than another, more potent because one can give, let us say, 2 milligrams instead of 15 of a rival product.

Now this is like saying that a dime is more potent than two nickels, because you can use one coin instead of two.

It may be more convenient to carry dimes than to carry nickels, but in regard to steroid preparations, where one has just a few milligrams involved and where one usually has to add many more milligrams to make a tablet that can be found in a pillbox, the problem of convenience of taking such preparations doesn't even come into the picture.

I am ashamed to say physicians do fall for this pharmaceutical numbers routine and are somehow convinced that drugs are better if one can give them in smaller amounts.⁷⁵

To the extent that physicians do "fall for this pharmaceutical numbers routine" the price received by the drug companies per unit of active ingredient will of course rise unless the price per tablet is correspondingly reduced, which for patented drugs is rarely the case. The manner in which the successive introduction of increasingly "potent" corticosteroids has tended to result in an increased realized price per gram as well as an increase in the margin above direct costs was brought out in the following table introduced during the hearings.⁷⁶

⁷⁴ Hearings, pt. 14, p. 8204.

⁷⁵ Hearings, pt. 14, p. 8139.

⁷⁶ Hearings, pt. 14, pp. 8244-8327. The table, as shown here, excludes a patented new product discussed in the hearing only "for illustrative purpose."

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TABLE 33.—Prices for corticosteroids to consumers and druggists, and computed cost, 1959

	Tablet size (milligram)	Number tablets per gram	Price to consumer per tablet	Price to consumer per gram	Price to druggist per gram	Computed cost based on bulk price, including wastage, tableting and bottling, but excludes selling and distribution costs ¹
	(1)	(2)	(3)	(4)	(5)	(6)
Cortisone.....	25	40	\$0.23	\$9.13	\$5.48	\$1.50
Hydrocortisone.....	20	50	.27	13.32	7.09	1.63
Prednisone.....	5	200	.30	59.65	35.80	3.12
Methyl prednisolone.....	4	250	.39	74.60	44.75	-----
Triamcinolone.....	4	250	.30	74.60	44.75	-----
Dexamethasone.....	.75	1,333	.27	358.00	214.80	72.69

¹ Based on lowest bulk prices as published or reported to subcommittee: Cortisone, \$1.79 per gram, Oil, Patent and Drug Reporter, Sept. 21, 1959; hydrocortisone, \$1.40 per gram, Oil, Patent and Drug Reporter, Sept. 21, 1959; prednisone, \$2.36 per gram, Syntex sales, 3d quarter, 1959; dexamethasone, \$65 per gram, Merck sale to Ciba, 1958.

Source: Cols. 1 to 5. "American Druggist Blue Book," 1959-60.

Since the price of each of these different corticosteroids, with the exception of cortisone, differs by no more than 10 percent per tablet, since their potency has tended to rise (col. 1), and since the number of tablets per gram has correspondingly tended to increase (col. 2), there has been a steady increase from one corticosteroid to the next in the price per gram (cols. 4 and 5).

Unless there is a corresponding increase in costs, there would be a progressive widening of the margin between direct costs and prices, moving from one corticosteroid to the next more potent one. Column 6 shows derived production costs including wastage, tableting, and bottling but excluding selling and distribution costs, computed on the basis of bulk sales prices. It can be seen that such a widening has taken place. For hydrocortisone the margin above direct costs was \$6.36 per gram; for dexamethasone (also sold at the same price per tablet) it was \$142.11 per gram.

The knowledge that price determination usually takes the form of matching the price of a predecessor product leaves unanswered the question of how the price of the original drug was determined. At some time there had to be a drug which served as the basis for setting the price of possibly a whole series of successive products. In some cases the history of the price of the original drug is shrouded in the mists of antiquity. The price of Diabinese was based on the price of Orinase; the price of Orinase was based on the price of insulin. The question then becomes, how did the price of insulin get where it was at the time that Orinase was introduced? For about a decade prior to that time the price of insulin had remained unchanged; following World War II it was 20 percent above its 1939 level. The price history can be extended back to 1922 when insulin was discovered. Even if all of the cost, demand, and other factors influencing the price of insulin throughout its history were known, how relevant would such knowledge be to understanding the factors involved in determining the price for the oral drugs? The one relevant fact is that, although manufactured at lower costs by an entirely different process using

entirely different raw materials, they were priced "to meet" the competition of insulin.

In some cases knowledge of the factors involved in stabilizing prices at a given level—which has then served to govern the prices of successive products—may become available with the completion of antitrust cases. Some of the considerations which Pfizer and American Cyanamid had in mind in stabilizing the price of the early broad spectrum antibiotics at \$5.10 may become known when the current price-fixing case of the Federal Trade Commission against the sellers of tetracycline is brought to an end.⁷⁷

But while knowledge of the price-determining process for the original product would be interesting, the important fact is that a good majority of today's drugs which by any standard would be regarded as important, have had their prices established on the basis of the price of a predecessor product. The necessity of giving attention to cost and demand factors has thus been obviated by the simple act of "meeting competition."

⁷⁷ Federal Trade Commission, *In the Matter of American Cyanamid & al.* docket No. 7211.