A STUDY OF THE ACCEPTANCE OF NEW PHARMACEUTICALS BY PHYSICIANS

by

DANIEL TOUSMAN

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TABLE OF CONTENTS

LIST OF TABLES

Table | Page

LIST OF CHARTS

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CHAPTER I

INTRODUCTION

One of the current problems facing the medical profession and its allied profession of pharmacy is the tremendous number of new pharmaceuticals being placed on the market each year. Paul de Haen, a consultant to the pharmaceutical industry, has compiled figures illustrating this point. Table 1 gives figures showing the number of new pharmaceuticals marketed each year from 1949 through 1958. These figures include only products marketed on a nationwide scale.

This influx of new pharmaceuticals is causing serious inventory problems for the retail pharmacist. It results in rapid obsolescence of older pharmaceuticals, along with some which are relatively new, while increasing his total investment in inventories. The pharmacist is also hard pressed to keep up with technical information on new pharmaceuticals.

Furthermore, physicians have a difficult time trying to keep up with new developments in pharmaceuticals. This point will be further illustrated in Chapter VI.

Figures show that only approximately 8% of the products introduced in a given year will be high profit items for the

Table 1

Pharmaceutical Products Introduced Nationally 1949-1958

Year	Number of Firms	Total New Products	New Single Chemicals	Duplicate Single Products	Compounded Products	New Dosage Forms
1949	84	389	40	147	202	170
1950	100	326	28	100	198	118
1951	86	321	35	74	212	120
1952	89	314	33	77	202	170
1953	107	353	48	79	226	97
1954	101	380	38	87	255	108
1955	124	403	31	90	282	96
1956	126	401	42	79	280	66
1957	127	400	51	88	261	96
1958	126	370	44	73	253	109
		3657	392	894	2371	1150
	New Dosage Forms	1150				
		4807				

New Single Chemical-Indicates products which are new single chemical entities not previously known, and developed by one manufacturer.

Duplicate Single Products-Products such as reserpine, dioctyl sodium sulfosuccinate which are put out by various manufacturers.

Compounded Products-Any product having more than one active ingredient.

New Dosage Form-If a product has originally been marketed in tablets and is now offered in ampuls, suppositories, etc., the latter are considered new dosage forms.

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[1] Paul de Haen, "370 Rx Drugs Launched in '58, de Haen Reports." Drug Trade News, vol. 34, no. 3, February 9, 1959, p. 44.

manufacturers, while 7% to 10% will make a small profit or barely break even.[2] Therefore, over 80% of the pharmaceutical products introduced each year will lose money for the manufacturer. While some of these products may fill an actual need for a small market, and in that respect, not be failures, most could probably be kept off the market without endangering the practice of therapeutics by the medical profession.

A great number of combinations and duplications quite similar to products already on the market are undoubtedly included in this 80% figure. These products often need a great amount of promotion to have a chance for acceptance by the medical profession. It seems reasonable that the less "original" a new pharmaceutical is, the more promotion is needed to gain acceptance of the product. Often this promotion is not forthcoming.

Obviously, if the number of unprofitable products could be reduced, everyone involved in the marketing of pharmaceuticals would benefit. The pharmaceutical manufacturers' marketing costs would probably decrease, leading to a reduction in drug prices. The physicians would be able to keep up more adequately with new pharmaceutical developments. If fewer new products were introduced, physicians

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[2] "Only Eight Out of a Hundred New Products Will Make It." Modern Medicine Topics, vol. 17, no. 5 (May, 1956).

might be more likely to prescribe those pharmaceuticals which are introduced. One physician gave a clue to this by stating he did not prescribe any new pharmaceuticals because the number marketed was so overwhelming that he could not keep up with them.

The retail pharmacist would benefit by being able to keep more adequately informed, and, at the same time, he would be able to reduce his total inventory investment.

There would be a tendency for prescription prices to fall, thus benefiting the patient.

Increased use of marketing research techniques will aid considerably in preventing the marketing of potential failures. The pharmaceutical manufacturer should be able to estimate the order of magnitude of the market for a given product, and once this has been determined, he could decide how much effort he could afford for its promotion.

There has been increased use in the past several years by the pharmaceutical industry of marketing research techniques. It may be significant that in 1958, the number of new pharmaceutical products released nationally fell 8% from the 1957 figure of 400, to 370. Although Paul de Haen attributes this fall to an increase in marketing costs, it is possible that improved marketing research techniques were responsible, at least in part.[3] It will be interesting to

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[3] Ibid.

observe whether this 8% drop is the start of a trend or whether it occurred purely by chance, with an increase due in the future.

This study concentrates on the physician as the market for new pharmaceuticals. While the patient is the one who eventually uses the product and controls the maximum size of the market, he is actually a "captive purchaser" of the pharmaceuticals, since he buys on instructions from the physician. Therefore, a firm must have an intelligent insight into the physician market, as well as the patient market, in order to market new pharmaceuticals effectively.

It has been hypothesized that the adoption process for a new pharmaceutical occurs in stages. A minority of physicians are constantly searching for new developments in pharmaceuticals, and use a given product appropriate to their specialty as soon as it is marketed. They tell their colleagues about the product. A minority of the other physicians learn about new pharmaceuticals in this way, from innovating colleagues, but the majority find out about the product from the pharmaceutical detailman. Some of these physicians use the product immediately, some seek additional information, and others decide to wait. After varying amounts of exposure to information on the product they, too, try it.[4]

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[4] Columbia University, Bureau of Applied Social Research, On the Flow of Scientific Information in the Medical Profession. July, 1955, pp. III-19.

An attempt will be made to determine whether certain backgrounds, opinions, and attitudes have any bearing on where certain physicians fit in this adoption process. Specifically, this study will try to show whether these factors have a bearing on the number of new pharmaceuticals prescribed, and if so, what the reasons for this correlation may be. The various rates of acceptance of entirely new single chemical entities marketed in 1957 will also be investigated.

The following background factors will be tested:

Age
Year of graduation from medical school
Size of practice
Type of practice
  single versus group
  internal medicine versus general practice
Attendance at meetings and conventions
Location of schooling
Service in the armed forces medical corps

Attitudes to be investigated include those on various promotional methods and the rate of new pharmaceutical introduction.

It should be noted that two studies of special interest in the field covered by this study are used as references. Promotional methods are discussed in A Study of Medical Advertising and the American Physician.[5] On the Flow of

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[5] Ben Gaffin and Associates, A Study of Medical Advertising and the American Physician-Part II. The Physician's Viewpoint. August 31, 1953.

Scientific Information in the Medical Profession[6] also covers much of the information sought in this study. What then is the reason for this study? First of all, this writer does not agree with all the conclusions derived, and secondly, the Columbia study uses only one pharmaceutical as the basis for its survey. Evidence suggests that a situation true for one product may not necessarily be true for others. This study attempts to get around this problem, although it creates others in the process.

Finally, both studies are somewhat dated. The market is ever changing. Thus, relationships true several years ago may not be true today.

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[6] Columbia University, op. cit.

CHAPTER II

METHODOLOGY

The primary purpose of this study is to determine whether measurable differences can be detected between physicians writing prescriptions for a relatively large number of new pharmaceuticals and those writing for a relatively small number. There is a great deal of product competition in the pharmaceutical industry. If a new product is brought out it must be promoted to the greatest number of physicians possible in as short a time period as possible. If it can be shown that certain physician characteristics are related to prescription writing habits, the initial promotion can then be directed toward those physicians having the greatest tendency to respond favorably.

The first step taken was to make a prescription study to relate each physician's total number of new product prescriptions to his total prescription volume. Paul de Haen's list of new single chemical entities marketed in 1957 was used as the list of new pharmaceuticals, in order to include only entirely new pharmaceuticals, and not combinations and duplications. This list was shortened by omitting parenteral and diagnostic preparations, since prescriptions ordinarily are not written for these products. The list was further modified, as will be discussed in a

later chapter.

The prescription study was conducted in nine widely scattered Madison, Wisconsin pharmacies. These pharmacies included three prescription pharmacies and six "traditional" pharmacies. Three pharmacies were chain outlets and six were independent. Only internists' and general practioners' prescriptions were counted, since physicians in other types of practices did not have an equal opportunity to use many pharmaceuticals on the de Haen list. It was felt that internists and general practitioners would have approximately equal chances to prescribe the listed pharmaceuticals. The list of internists and general practioners in Madison was furnished by the Dane County Medical Society. It was modified to include only those internists and general practioners in private practice in Madison over the entire period covered by the study.

The study covered prescriptions written during a 17 month period from January 1, 1957, through May 31, 1958, so that each new pharmaceutical brought out in 1957 could be followed for approximately six months. For example, Diuril, introduced in December, 1957, was considered a new pharmaceutical through May, 1958. After a six month period a pharmaceutical would no longer be considered as new.

The pharmacies covered had varying prescription volumes, as illustrated in Table 2. This list includes all prescriptions in their prescription files, other than refills.

Table 2

Total Prescription Volume in Nine Pharmacies

	Total Prescriptions
Pharmacy 1	10,655
Pharmacy 2	3,266
Pharmacy 3	2,331
Pharmacy 4	5,063
Pharmacy 5	6,172
Pharmacy 6	5,855
Pharmacy 7	13,698
Pharmacy 8	27,346
Pharmacy 9	7,870
	82,256

Of this number, 23,581 prescriptions were written by the 41 internists and general practitioners included in this study, a percentage of 28.6. This figure cannot be construed as being the percentage of prescriptions written by internists and general practitioners throughout the city of Madison, since this figure would vary, depending on the location of the pharmacies covered in relation to various physicians. Furthermore, not included in this 28.6% are prescriptions written by internists and general practitioners not in private practice in Madison for the full 17 month period, as well as those providing a volume of less than 200 prescriptions.

Fifty one physicians were eligible for the study. Of this number, only 41 contributed enough total prescriptions to be considered further in choosing a sample to interview. The minimum number was 200 prescriptions. Figures

derived from physicians contributing less than this number were considered unreliable. It is admitted that 200 is a rather low dividing line. However, the largest prescription pharmacy in Madison did not see fit to cooperate in this study, making it extremely difficult to obtain a higher volume of prescriptions in the time available for the study.

The remaining 41 physicians were ranked on the basis of the relation of prescriptions for new pharmaceuticals to the total number of prescriptions written. Table 3 is a summary of the rankings.

The 12 top ranking physicians and the 12 lowest ranking physicians were selected to be interviewed.

The mean of the upper group is 47.00, approximately 9 times that of the lower group mean of 5.39. The lowest physician in the upper group wrote for new pharmaceuticals 35.38 times per 1000, against 9.87 times for the highest physician in the lower group. Thus, a difference of approximately 3.5 times exists at the closest proximity between the groups.

This method does not necessarily measure innovation with complete accuracy. However, this possible limitation will be discussed in the following chapter.

Only 11 physicians in each group were interviewed. One from each group was on an extended vacation at the time the study was being run. As it turned out, of the 22

Table 3

Ranking of Physicians on the Basis of New Pharmaceutical Acceptance

Physician Rank	Total Prescriptions	New Product Prescriptions	New Product Prescriptions per 1000 Total Prescriptions
1	222	16	72.07
2	2179	125	57.37
3	662	34	54.66
4	350	19	54.29
5	201	10	49.75
6	469	22	46.91
7	704	33	46.88
8	584	27	46.23
9	247	11	44.53
10	225	10	44.44
11	322	12	37.27
12	2558	91	35.58
13	654	22	33.64
14	260	7	26.92
15	224	6	26.79
16	769	20	26.01
17	724	16	22.10
18	307	6	19.54
19	425	8	18.82
20	324	6	18.52
21	445	7	15.73
22	387	6	15.50
23	544	8	14.71
24	345	5	14.45
25	578	10	13.40
26	746	8	12.84
27	410	5	12.04
28	2021	22	10.89
29	505	5	9.90
30	709	7	9.87
31	572	5	8.74
32	357	3	8.40
33	858	7	8.16
34	207	1	4.83
35	444	2	4.50
36	299	1	3.34
37	344	1	2.91
38	348	1	2.87
39	220	0	0.00
40	414	0	0.00
41	417	0	0.00
	23,581	605	
		Arithmetic Average	25.66
		Median	15.73

physicians interviewed, 11 were internists and 11 were general practitioners.

The questionnaire used was of a semi-structured type, designed to solicit free and comparable response on the attitude and opinion questions. It was pretested before the interviews were made.

The interviews, of approximately 20 minutes duration each, were held in the individual physicians' offices.

It is of interest to note that several physicians asked whether a particular pharmaceutical firm was sponsoring this study, insinuating that the interview would be terminated if such were the case.

CHAPTER III

LIMITATIONS

The major limitation of this survey is its scope, both in the size of the prescription sample and in the size of the physician sample.

With a sample of 22 physicians it is dangerous to draw definite conclusions from the data. This study then, will more adequately serve to indicate trends and situations which may be present, and which should be verified by additional work in the field. The fact that the upper and lower groups did not differ statistically in regard to some of the factors tested does not necessarily mean that differences do not exist. While this may be true, it is also possible that a difference does exist, but is not pronounced enough to appear in this small sample.

The other objection to scope was briefly mentioned in Chapter II. In order to have a large enough group of physicians available to allow the selecting of widely differing upper and lower groups, a low prescription minimum of 200 total prescriptions had to be set.

Only nine of approximately 50 Madison pharmacies were included in the prescription study. It is possible that results would have been different had a larger number of pharmacies been used. The inclusion of more pharmacies

would have enabled a prescription minimum of greater than 200 to be used.

The major reason for the small scope of the study, other than the lack of cooperation by one large pharmacy, was the lack of time available for the survey work.

The methodology has several other weaknesses, as well as strengths. This study, by including a large number of pharmaceuticals, is able to compare the relative acceptance of each, and the differences in this acceptance which may occur.

One problem occurs when attempting to determine which physicians are innovators. In a study such as this, using many pharmaceuticals, it would be extremely difficult to find a completely satisfactory methodology to determine which physicians are innovators. A situation true for one product may not be true for another.

The assumption was made in using the number of new pharmaceuticals prescribed over a six month period as a criterion, that innovators would start prescribing a given product earlier, and thus write for the product more times over a six month period. The assumption seems borne out by the fact that, of the 12 physicians who wrote prescriptions for two or more new pharmaceuticals in the first two months after introduction, nine were among the top 12 physicians in the methodology used. A tenth physician

was thirteenth on the ranked list. Thus the list of the top 12 physicians as determined in this study seems to include practically all the innovators.

It should also be pointed out that only the month of introduction of each new product was used, not the exact date.

It would be impossible to determine accurately the exact date of introduction. Although figures are available from the pharmaceutical firms, these figures do not indicate when the product actually reached pharmacy and hospital shelves. Furthermore, the exact timing of promotion is not necessarily indicated. Therefore, some drugs released at the end of a month would not have as much time to appear on the survey as pharmaceuticals brought out at the beginning of the month.

The use of Madison, Wisconsin, as the test area was again necessitated by lack of time. Madison is certainly an atypical city in many respects. Chief among these is the location of the University of Wisconsin Medical School in conjunction with Wisconsin General Hospital. The University of Wisconsin Pharmacy School is also located in Madison. The influence of these institutions on the findings is difficult to estimate.

The year 1957 was not a typical year, if there is such a thing as a typical year. An Asian flu epidemic struck

Madison in October. The effect of this will be shown in the next chapter.

The list of pharmaceuticals marketed will vary greatly in respect to types of products and companies represented in different years. Thus results derived from one year's data may differ widely from results derived from another year.

In spite of these limitations, it is hoped that the findings obtained in this study are of some value, if not to make definite generalizations, to give at least an indication of the situation as it actually exists.

CHAPTER IV

A COMPARISON OF THE ACCEPTANCE OF VARIOUS NEW PHARMACEUTICALS

Seasonal Movement in Total Prescription Volume

The number of prescriptions written by internists and general practitioners varies greatly from month to month. Table 4 indicates the number of prescriptions contributed per day by the 41 ranked physicians in each of the 17 months covered. It must be remembered that October, 1957, was abnormal due to the occurrence of the Asian flu epidemic.

Table 4

Seasonal Movement in Total Prescription Volume

Month	Year	Total Prescriptions Contributed by 41 Ranked Physicians	Total Prescriptions per Day
January	1957	1450	46.7
February	1957	1409	50.3
March	1957	1544	49.8
April	1957	1377	45.9
May	1957	1392	44.9
June	1957	1194	39.8
July	1957	1179	38.0
August	1957	1314	42.4
September	1957	1325	44.2
October	1957	1693	54.6
November	1957	1282	42.7
December	1957	1375	44.4
January	1958	1508	48.7
February	1958	1519	54.3
March	1958	1498	48.3
April	1958	1271	42.4
May	1958	1251	40.4
		23,581	

Chart 1 summarizes this seasonal movement graphically.

There are three points which must be taken into account when interpreting these figures. First, the average number of prescriptions written per day in a given month might be more accurately determined by taking into consideration the actual number of working days for physicians during the month. Secondly, the physicians contributing a larger number of prescriptions to the study will have a greater influence on these figures than those contributing a lesser number. Finally, the time of each physician's vacation will have some influence.

It would appear, bearing these things in mind, that the largest daily prescription volume occurs in February, then falls off to a low point during the mid-summer months, before rising again toward the February peak.

Relative Acceptance of New Pharmaceuticals

The basis for the list of new pharmaceuticals, as previously stated, was the de Haen list of entirely new single chemical entities marketed nationally in 1957. This list, excluding parenterals and diagnostic agents is shown in Table 5.

Table 6 summarizes number of new single chemical entities introduced nationally by each firm.

In addition, Winthrop, Sandoz, Pfizer, Lakeside, and Ames have either parenterals or diagnostic agents present

Chart 1

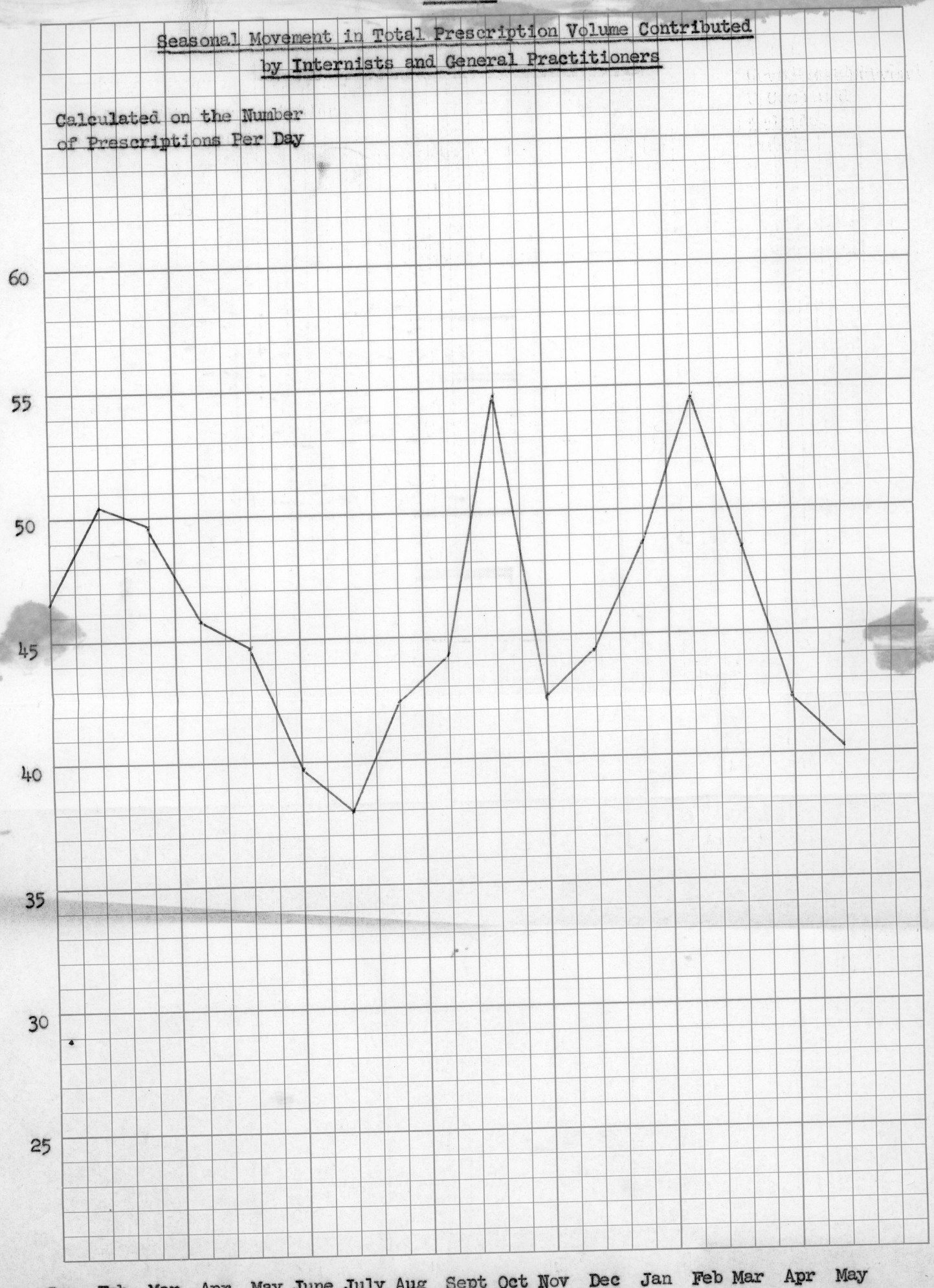
Seasonal Movement in Total Prescription Volume Contributed by Internists and General Practitioners
Calculated on the Number of Prescriptions Per Day
60
55
50
45
40
35
30
25
Jan Feb Mar Apr May June July Aug Sept Oct Nov Dec Jan Feb Mar Apr May
Month (From January 1957)

Table 5

Paul de Haen's List of New Single Chemical Entities Introduced Nationally in 1957

Month of Introduction	Pharmaceutical (Trade Name)	Therapeutic Class	Manufacturer
January	Ultran	Ataraxic	Lilly
	Benzapas	Antitubercular	Smith-Dorsey
February	Tral		
	Tral with Phenobarb.*	Anticholinergic	Abbott
	Maxukal	Calcium Therapy	Breon
	Leukeran	Antileukemic	Burroughs-Welcome
	Celontin	Anticonvulscent	Parke-Davis
	Pacatal	Ataraxic	Warner-Chilcott
March	Kynex	Sulfonamide	Lederle
	Suavitil	Ataraxic	Merck, Sharp & Dohme
	Trilafon	Ataraxic	Schering
	Halotestin	Hormone	Upjohn
April	Harmonyl	Rauwolfia Product	Abbott
	Elorine Chloride	Anticholinergic	Lilly
May	Peganone	Anticonvulscent	Abbott
	Estradurin	Hormone	Ayerst
	Sintrom	Anticoagulent	Geigy
	Dornavac	Inhalant	Merck, Sharp & Dohme
	Zanchol	Hydrocholeretic	Searle
June	Saff	Hypocholesterolemic	Abbott
	Hydeltrasol Opthalmic Solution Neo-Hydeltrasol Opthalmic Solution*	Eye Disorders	Merck, Sharp & Dohme
	Enovid	Hormone	Searle
	Orinase	Hypoglycemic	Upjohn
July	--------		
August	Norlutin	Hormone	Parke-Davis

September	Theruhistin	Antihistamine	Ayerst
	Darvon		
	Darvon Compound*	Analgesic	Lilly
	V-Cillin-K	Antibiotic	Lilly
	Dimetane	Antihistamine	Robins
	Robaxin	Muscle Relaxant	Robins
	Vesprin	Ataraxic	Squibb
	Medrol	Corticoid Hormone	Upjohn
October	Octylan	Laxative	Don Baxter
	Levonor	Reducing Agent	Nordmark
	Darbid		
	Combid*	Anticholinergic	Smith, Kline, & French
	Zactirin	Analgesic	Wyeth
November	---		
December	Dartal	Ataraxic	Searle
	Cothera	Cough Therapy	Ayerst
	Diuril	Diuretic	Merck, Sharp & Dohme
Not Specified‡	Magnocyl	Laxative	Elder
	Betadine	Antiseptic	Tailby-Nason
	Disipal	Muscle Relaxant	Riker

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* Starred products were not included on de Haen's list, but are combinations brought out at the same time as another product on the list, and containing the product as the chief therapeutic agent.

‡ Dates were not given for these products. Although the information is available elsewhere, other lists sometimes vary with the de Haen list. Therefore, dates are omitted in the interest of consistency. Actually, this problem is of academic interest only, as none of these pharmaceuticals appeared in the prescription study.

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[7] Paul de Haen, "New Single Chemical Entities Introduced-1957." (List furnished by the Pfizer Co.)

Table 6

Summary of Firms Introducing New Single Chemical Entities Nationally in 1957

Firm	Number of New Single Chemical Entities	Firm	Number of New Single Chemical Entities
Abbott	4	Burroughs-Welcome	1
Lilly	4	Elder	1
Merck, Sharp & Dohme	4	Geigy	1
Ayerst	3	Lederle	1
Searle	3	Nordmark	1
Upjohn	3	Riker	1
Parke-Davis	2	Schering	1
Robins	2	Smith-Dorsey	1
Warner-Chilcott	1	Smith, Kline, and French	1
Don Baxter	1	Squibb	1
Breon	1	Tailby-Nason	1
		Wyeth	1

on the original de Haen list. Thus, the 51 new single chemical entities introduced nationally in 1957 were accounted for by 28 firms, out of the 127 that marketed all kinds of new products (Table 1, page 2). Eight firms accounted for 26 of these products. This is logical, since many smaller firms are unable to perform original research due to limited finances.

Table 7 illustrates the new single chemical entities on the de Haen list as differentiated by product class.

It appears as though 1957 was a year for tranquilizers, as six ataraxics are listed. In addition, Harmonyl, a "rauwolfia product" can be considered a seventh ataraxic.

Table 7

Number of New Single Chemical Entities
Introduced Nationally in 1957 per Therapeutic Class

Therapeutic Class	Number	Therapeutic Class	Number
Ataraxic	6	Anticoagulent	1
Hormone (Sex)	4	Sulfonamide	1
Anticholinergic	3	Antibiotic	1
Antihistamine	2	Diuretic	1
Analgesic	2	Inhalant	1
Anticonvulscent	2	Eye Disorders	1
Laxative	2	Reducing Agent	1
Muscle Relaxant	2	Hydrocholeretic	1
Rauwolfia Product	1	Antitubercular	1
Hypocholesterolemic	1	Antiseptic	1
Cough Therapy	1	Corticoid Hormone	1
Calcium Therapy	1	Hypoglycemic	1
Antileukemic	1		

It will be of considerable interest to see how these tranquilizers fared against each other. It should be remembered that competition already on the market was strong, with products such as Miltown, Equanil, and Thorazine being used widely. This situation will be considered in more detail later in this chapter.

In considering the relative success or failure of a new pharmaceutical to be adopted over the first six month period after introduction, the potential market for that product must be taken into account. It is possible that some pharmaceuticals are good products, and become accepted, but are indicated so seldom that they show up poorly or not at all in this study. However, the real criterion of

success or failure of products with a more adequate market potential is the profit or loss contributed to the firm by the given pharmaceutical. These two measures are outside the scope of this study.

The comparative success of various pharmaceuticals may be viewed from two directions, using the methodology in this study. Criteria may be the total number of prescriptions written for each new pharmaceutical, or the number of physicians prescribing each product. In the first case, one runs the risk of finding some products which are not widely accepted, but which are used heavily by those physicians who do accept them. In the second case, one runs the risk of including as widely accepted new pharmaceuticals those which may be widely tried, but later discarded as being inferior products. The analysis in Table 8 will use both methods. It is based on prescriptions written by the 41 ranked internists and general practitioners.

Other new pharmaceuticals prescribed at least once included the following:

Trilafon
Cothera
Zactirin
Zanchol
Elorine Chloride
Saff
Theruhistin
Dimetane
Dartal

Table 8

The Top Ten New Single Chemical Entities Marketed Nationally in 1957

Ranked on the Basis of Total Number of Prescriptions Written by Physicians (n=41)		Ranked on the Basis of Number of Physicians Prescribing (n=41)	
Pharmaceutical	Number	Pharmaceutical	Number
Darvon, Darvon Compd.	213	Diuril	27
Diuril	138	Darvon, Darvon Compd.	19
Orinase	65	Orinase	16
Ultran	64	Ultran	10
Combid, Darbid	33	Kynex	9
Suavitil	23	Suavitil	8
V-Cillin-K	19	Robaxin	5
Kynex	15	Medrol	5
Robaxin	8	Combid, Darbid	5
Medrol	7	V-Cillin-K	4

Probably, the list using the total number of physicians is best when considering the acceptance of new pharmaceuticals. The possibility of wide trial of inferior products is small in view of the fact that all products on this list were popular enough to be included on the other list. The total prescription list was also weighted heavily to the prescribing habits of those physicians contributing a high volume of prescriptions. The opportunity to use many of these pharmaceuticals varies greatly, adding to the rationale for using the second list. This may be due to seasonal, as well as market potential factors. For example, Kynex undoubtedly fared more poorly on the total prescription list than it

would have had introduction occurred in the fall, just before the Asian flu epidemic. These problems will be less apparent if the number of physicians prescribing a given product is used as the criterion of measurement.

One point is clear, however; the top ten pharmaceuticals as listed were the most widely accepted products no matter which method was used. Only the order varied. Darvon and Darvon Compound, along with Diuril were the most popular new single chemical entities introduced in 1957. This statement is true for Madison internists and general practitioners, but is not necessarily true as a generalization. Charts 2, 3, 4, and 5 show, graphically, the acceptance of the top ten pharmaceuticals over each of the six months following the introduction of each product. Dartal and Trilafon are also included in Chart 5 to allow for comparison of the four tranquilizers appearing in prescriptions in the study. Note should be taken of the differences in scale between the various charts.

The basis for these figures is the total number of prescriptions written for each product. Although not as good a measure academically of new product acceptance as the list of the total number of prescribers, it is of more practical value to the pharmaceutical industry. Profits are influenced by sales. Whether a given sales volume is furnished by 10 or 100 physicians is not of major importance when measuring the

Chart 2

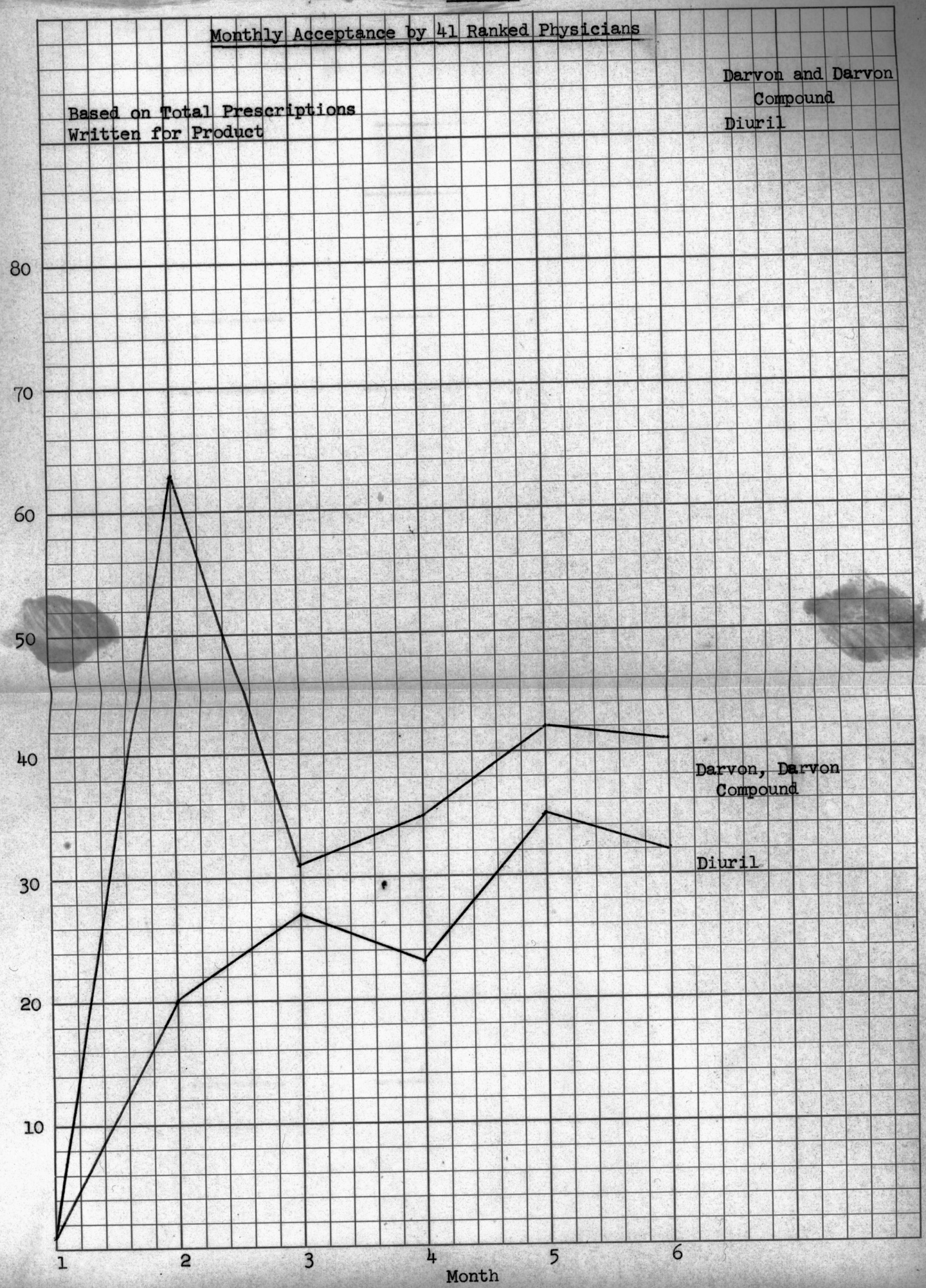


Chart 3

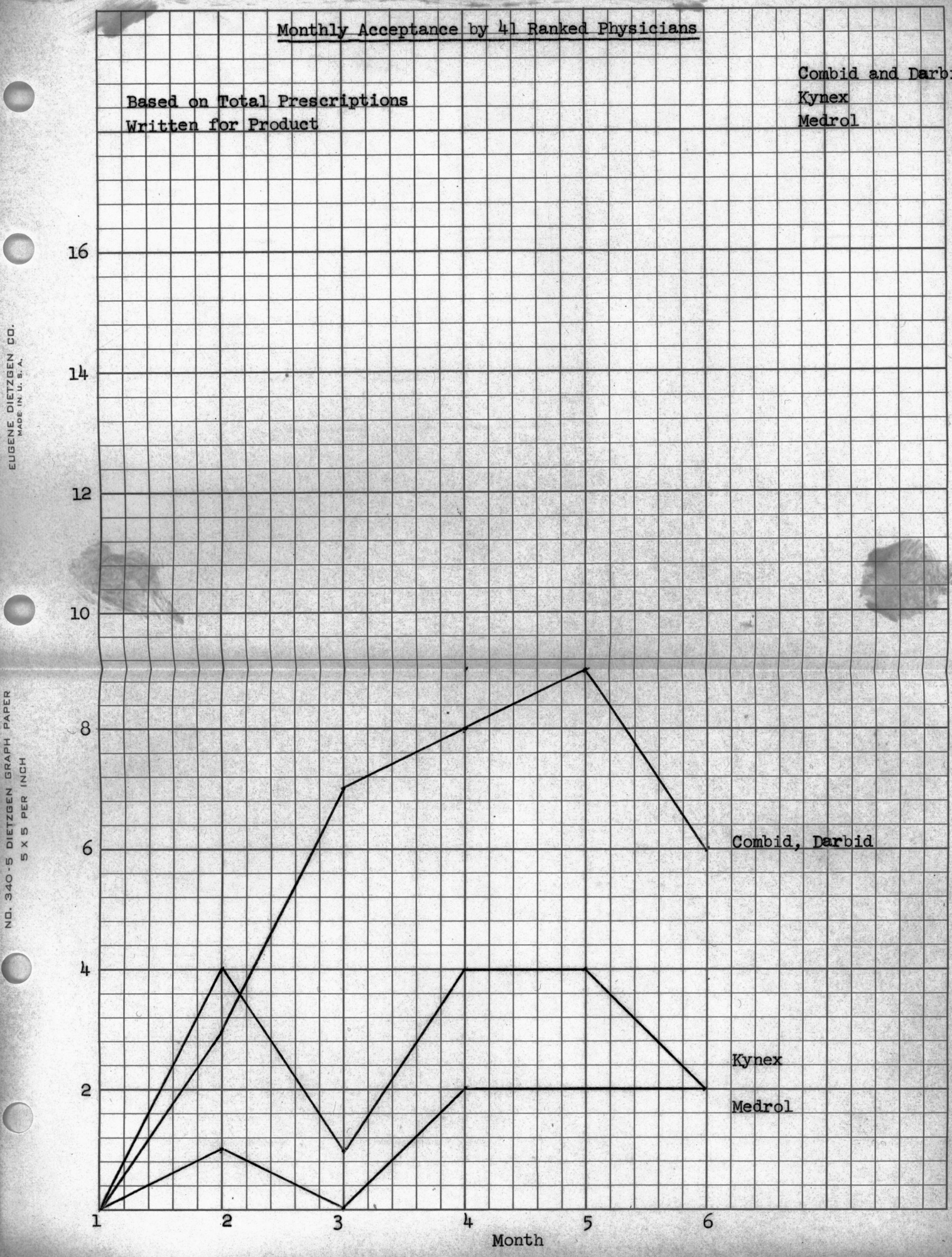


Chart 4

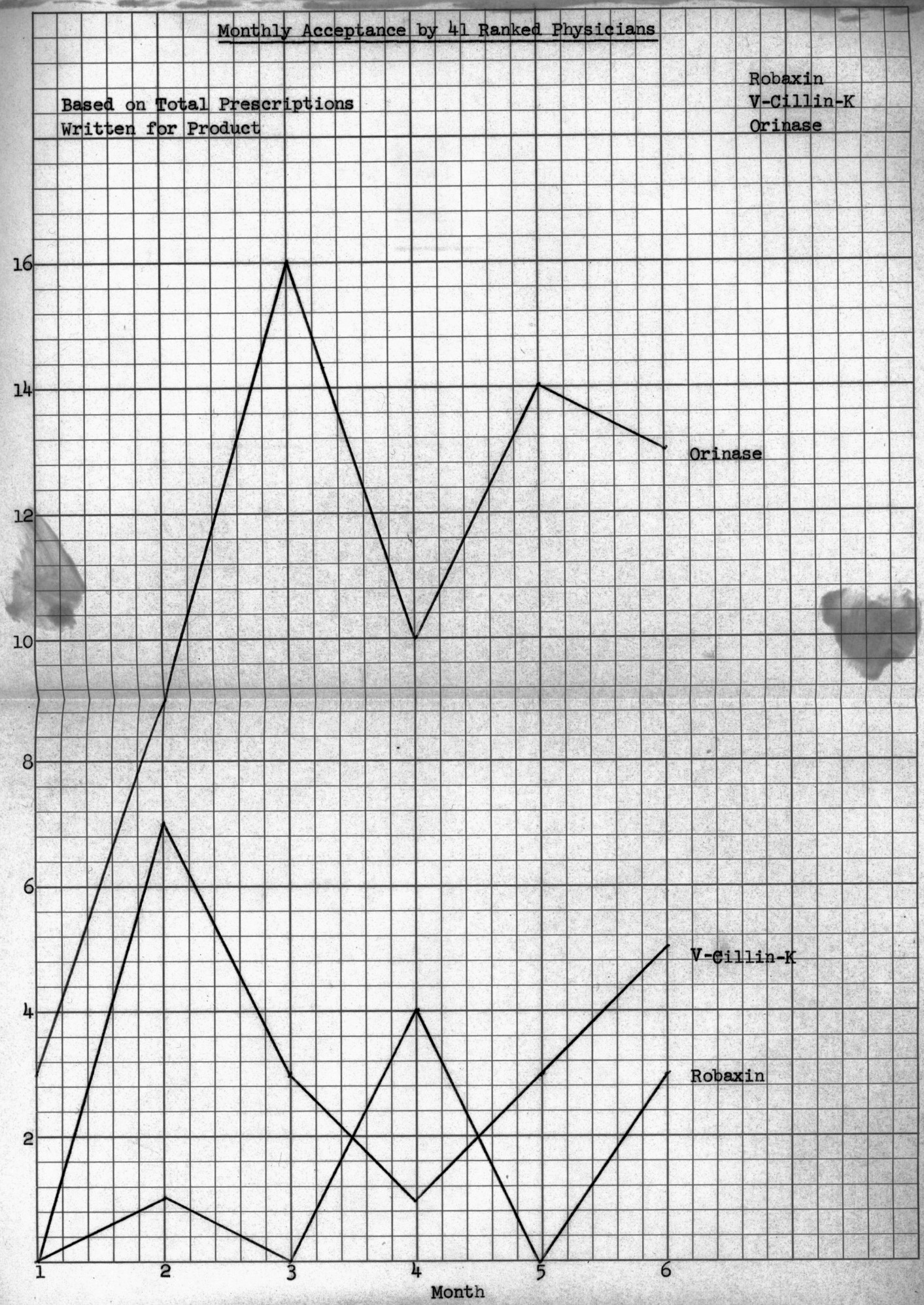
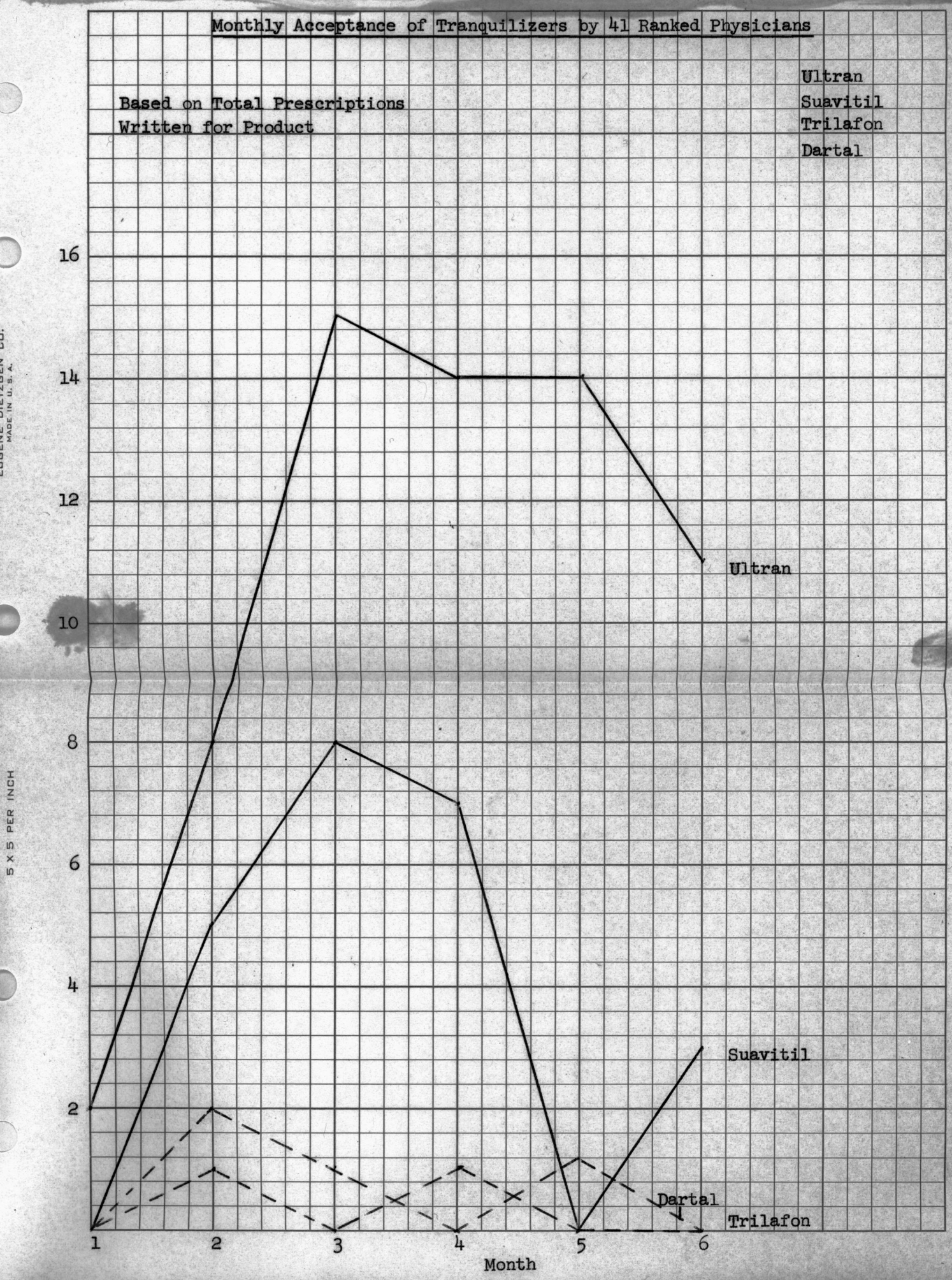


Chart 5


Monthly Acceptance of Tranquilizers by 41 Ranked Physicians
Based on Total Prescriptions Written for Product
Ultran
Suavitil
Trilafon
Dartal
16
14
12
10
8
6
4
2
Ultran
Suavitil
Dartal
Trilafon
1
2
3
4
5
6
Month

profit furnished by a product.

The other seven new pharmaceuticals were not prescribed in great enough volume to graph. They are, however, listed in Table 9, the summary table. It must be remembered that the graph of this table, Chart 6, is weighted toward the curves of the most popular pharmaceuticals listed.

It appears as though prescriptions for most new pharmaceuticals declined after a peak at the two or three month mark. Several possible reasons, other than the seasonality of some products, are:

> Some physicians want to test the effects of the products before further use.
>
> Some physicians do not have success with a given product, therefore discontinuing use after an initial trial.
>
> Other competing products enter the field.

Probably, all three explanations are true in part. The fact that more physicians try new products for the first time later in the adoption cycle counterbalances these reasons to some degree, and is possibly responsible for the rise that often occurs after the initial decline. Furthermore, the physicians in (1) above, may have ended their waiting period and commenced reusing certain products.

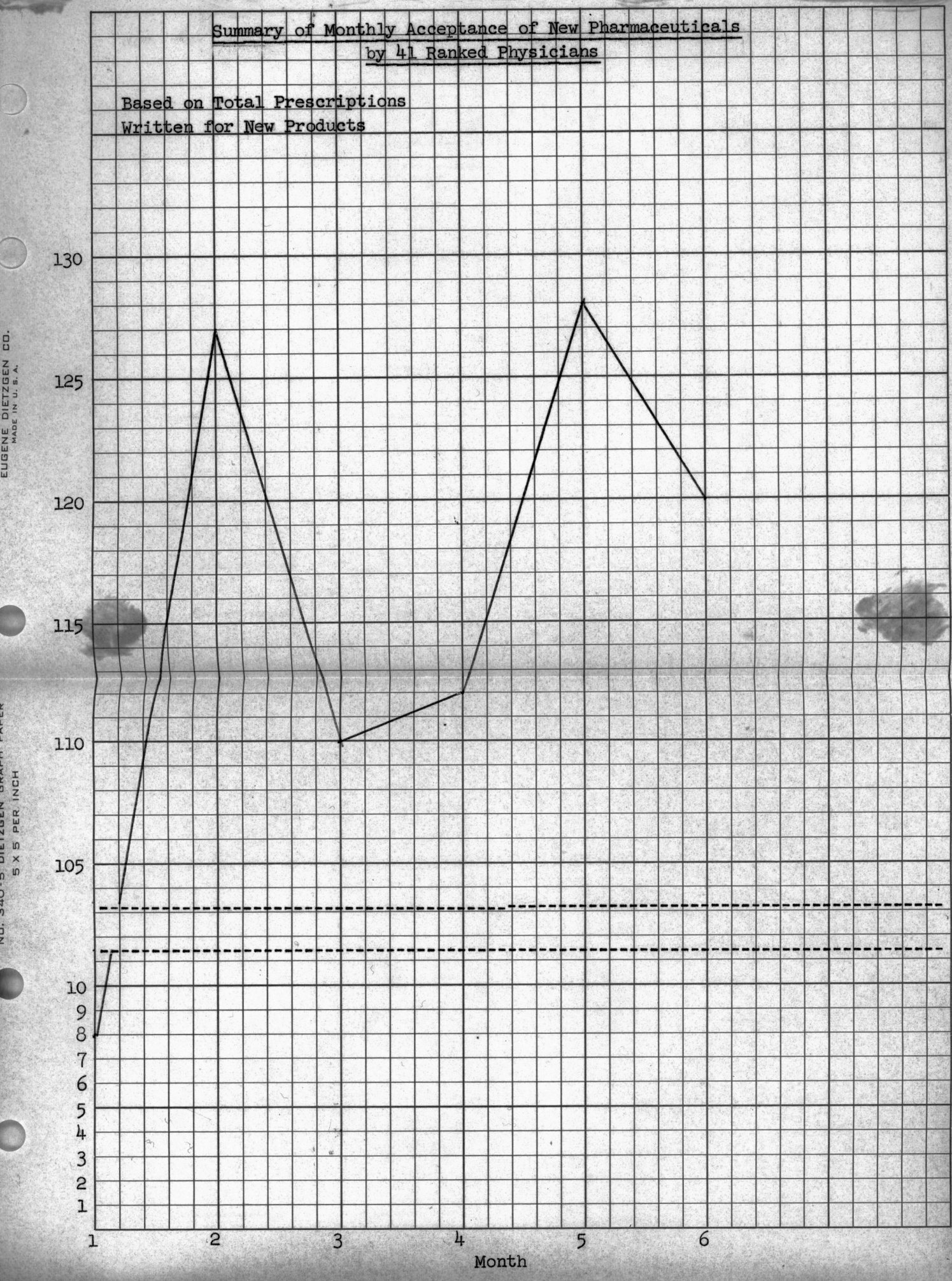
Because a new pharmaceutical does not reach wide acceptance within the first six months after introduction does not necessarily mean acceptance will not be forthcoming later. During the interviewing, made during March,

Table 9

Summary of Monthly Acceptance of New Pharmaceuticals on the de Haen List

Pharmaceutical	Month 1	2	3	4	5	6	Total
Combid, Darbid	0	3	7	8	9	6	33
Cothera	0	1	0	0	0	0	1
Dartal	0	2	1	0	1	0	4
Darvon, Darvon Com.	1	63	31	35	42	41	213
Dimetane	0	1	0	0	1	1	3
Diuril	1	20	27	23	35	32	138
Elorine Chloride	0	0	0	0	1	0	1
Kynex	0	4	1	4	4	2	15
Medrol	0	1	0	2	2	2	7
Orinase	3	9	16	10	14	13	65
Robaxin	0	1	0	4	0	3	8
Saff	0	0	1	0	1	0	2
Suavitil	0	5	8	7	0	3	23
Theruhistin	1	0	0	0	0	0	1
Trilafon	0	1	0	1	0	0	2
Ultran	2	8	15	14	14	11	64
V-Cillin-K	0	7	3	1	3	5	19
Zactirin	0	0	0	3	1	1	5
Zanchol	0	1	0	0	0	0	1
	8	127	110	112	128	120	605

Chart 6



1959, the 22 physicians interviewed were asked about pharmaceuticals on the de Haen list most beneficial to their private practice. The top ten pharmaceuticals as determined by this question are summarized in Table 10.

Table 10

The Ten Most Beneficial Pharmaceuticals on the de Haen List as of March, 1959

Pharmaceutical	Physicians Mentioning (n=22)
Diuril	22
Darvon, Darvon Compound	18
Orinase	16
Medrol	13
Combid, Darbid	12
V-Cillin-K	11
Ultran	10
Trilafon	9
Kynex	8
Robaxin	7

With the exception of the replacing of Suavitil by Trilafon, the make-up of this list does not differ from that of the original list of ranking. Several of the pharmaceuticals did change in rank, however.

It seems apparent that, in general, the pharmaceuticals adopted most widely during the first six months after introduction will retain their popularity as compared with other products released during the same general time period. Pharmaceuticals with little or no usage during the first six month period will not usually become widely accepted at a

later date. Exceptions to this rule do exist. Although not determined quantitatively, it was observed that some products obtaining some level of eventual usage did not appear in individual prescription files until after six months from the date of release. This can be expected of products which are useful, but which have a limited market potential.

Acceptance of Tranquilizers Introduced Nationally in 1957

Seven new tranquilizers appeared on the national market in 1957. They were as follows:

January----------Ultran
February----------Pacatal
March----------Suavitil
Trilafon
April----------Harmonyl
September----------Vesprin
December----------Dartal

Three of these products, Pacatal, Harmonyl, and Vesprin, did not appear in the prescription study. Table 11 compares the other four.

Table 11

Comparison of Tranquilizers Introduced Nationally in 1957
(based on usage by 22 interviewed physicians)

Pharmaceutical	Total Prescriptions	Number of Physicians Prescribing	Number of Physicians Benefiting as of March, 1959
Ultran	56	4	10
Suavitil	8	4	3
Dartal	2	1	2
Trilafon	2	1	9

Ultran appears to have reached the widest acceptance of the tranquilizers introduced nationally in 1957. Initially, it had extremely high usage by a few of the physicians interviewed, but this concentration appears to have lessened later. In comparing Suavitil with Trilafon, it seems as though Suavitil had a better early acceptance, but fell off in popularity later. The exact reverse seems true for Trilafon. Table 9 and Chart 5 show Suavitil prescriptions fell sharply after a good early acceptance.

By the end of 1957 the tranquilizer field appeared rather saturated, although new products continue to be released. Combinations of some tranquilizers are now appearing on the market. Deprol-Wallace and Prozine-Wyeth are examples. Tranquilizers are also found in combination with pharmaceuticals in other therapeutic classes.

CHAPTER V

VARIATIONS IN BACKGROUNDS BETWEEN PHYSICIANS

Age and Year of Graduation

Table 12 gives a comparison of the ages of the upper and lower groups of physicians as determined by the method outlined in Chapter II.

Table 12

Ages of Physicians Interviewed (n=22)

Upper Group		Lower Group
62		54
60		50
57		49
55		48
43		45
43		45
43		39
40		35
40		34
37		33
35		33
515		465
46.8	Average Age	42.3
8.5	Standard Deviation σ	7.0

The method used to determine whether these two groups differ statistically in average age will be illustrated below.

First, the standard error of the difference (σ_{diff}) is

determined by the use of the following formula, applicable only to small samples of n=30 or less.

$$\sigma_{diff} = \sqrt{\frac{n_1\sigma_1^2 + n_2\sigma_2^2}{n_1 + n_2 - 2} \times \left(\frac{1}{n_1} + \frac{1}{n_2}\right)}$$

$n_1 = 11$ $\quad \sigma_1 = 8.5$

$n_2 = 11$ $\quad \sigma_2 = 7.0$

$$\sigma_{diff} = \sqrt{\frac{794.8 + 539.0}{20} \times .18}$$

$$\sigma_{diff} = \sqrt{12.0}$$

$$\sigma_{diff} = 3.46$$

This figure is then divided into the difference between the two sample means.

$$\frac{46.8 - 42.3}{3.46} = 1.30 \text{ (Probability factor)}$$

By reference to the proper statistical tables it can be determined that this great a difference can occur about 20% of the time as the result of chance. The figure accepted in this study to indicate significance is 5% or less. With a sample size of 22, the probability factor must be 2.08 or larger to indicate the presence of a statistically significant difference.

It is apparent then, that this age difference is not statistically significant. Yet the fact that the probability

factor does approach significance suggests that results indicating a statistical difference might have been achieved had a larger sample been used. The fact that five of the seven physicians under 40 years of age are in the lower group, while all four physicians 55 years of age or older belong in the upper group strengthens this position.

Before commenting on this situation, it would be wise to analyze the length of time each physician has been out of medical school. Although this relates closely to age, a perfect correlation did not always exist in the sample tested. Table 13 compares the upper and lower groups on the basis of the number of years since graduation from medical school.

Table 13

Number of Years Since Graduation From Medical School (n=22)

Upper Group	Lower Group
39	22
36	20
30	20
30	18
19	17
17	16
17	14
16	12
16	10
13	8
7	5
240	162
21.8	14.7
9.0	4.5

Average

$\sigma_{diff} = 3.16$

$$\frac{21.8 - 14.7}{3.16} = 2.24$$

This probability factor indicates a significant difference does exist. These figures indicate that physicians who have been out of medical school for a long while tend to write more prescriptions for new pharmaceuticals in relation to total prescription volume than do more recently graduated physicians. This appears especially true when comparing physicians graduating over 30 years ago with those graduating since 1945.

Still to be answered is the question pertaining to the reason for this situation. The answer probably lies in the attitudes and backgrounds of individual physicians, although definite proof is beyond the scope of this study. The following comments present possible rationalizations for the difference between the two groups.

Possibly, and this has been observed by Madison detailmen, older physicians are more likely to rely on methods of pharmaceutical promotion, of which detailing is the most important. These physicians, having been out of school longer, find many of the therapeutic principles learned in medical school have become obsolete. Their education does not have a great hold on them. Furthermore, they have a greater trust in detailmen, some of whom they have known for years. This may not be true for many of the more recently graduated physicians. They feel more secure in continuing to use the therapeutic principles learned at school. These

principles are often conservative. Also, they do not place as great a faith in detailing as do their older counterparts. None of the physicians voicing strong complaints about detailing during the interviews was over 43 years of age. Younger physicians perhaps have a more self-assured attitude.

General Practitioners versus Internists

The group of 22 interviewees was, strictly by chance, divided into 11 internists and 11 general practitioners. Table 14 shows the distribution of each class into the upper and lower groups.

Table 14

A Comparison of Internists and General Practitioners

Type of Practice	Upper Group	Lower Group
Internal Medicine	6	5
General Practice	5	6
	11	11

These figures, giving a slight edge to internists, are far from being statistically significant. However, another method was also used in an attempt to determine whether a difference exists between internists and general practitioners. All 41 physicians ranked in the study were considered. A comparison was made of each group's acceptance of new pharmaceuticals over each month of the six months new pharmaceuticals were followed. This was done by taking the number of prescriptions written for new pharmaceuticals in each month following new product introduction as a percentage of

the total number of prescriptions written by the group over the entire period studied. The results, as depicted in Table 15 and Chart 7, are expressed as prescriptions for new pharmaceuticals per 10,000 total.

Table 15

A Comparison of New Pharmaceutical Acceptance by Internists and General Practitioners

Month	Prescriptions per 10,000 Total	
	Internists (n=21) 14,016 Total Prescriptions	General Practitioners (n=20) 9565 Total Prescriptions
1	5.0	1.0
2	65.6	40.8
3	57.1	38.7
4	55.1	29.3
5	67.8	37.6
6	53.5	47.0

These figures indicate that internists were prone to accept pharmaceuticals introduced in 1957 more rapidly than general practitioners. Only in the sixth month did the gap between the two groups begin to close.

Before accepting the conclusion that internists are earlier new pharmaceutical prescribers than general practitioners, it would be wise to consider the length of time each group has been out of medical school, as is done in Table 16.

Chart 7

A Comparison of New Parmaceutical Acceptance by Internists and General Practitioners.

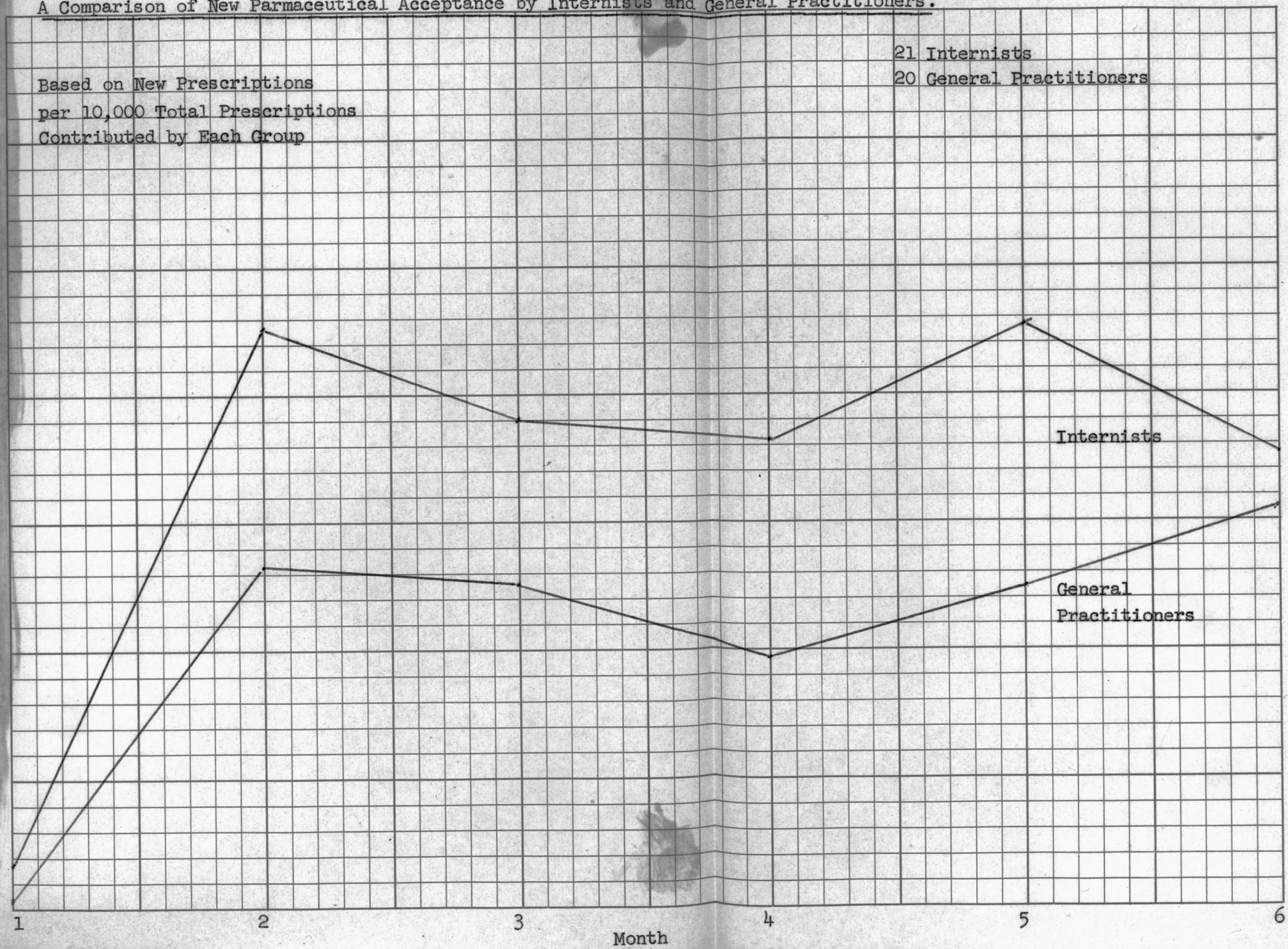


Table 16

A Comparison of the Number of Years Since Graduation From Medical School For Internists and General Practitioners(n=22)

Internists		General Practitioners
39		30
36		20
30		18
22		17
20		17
19		17
16		16
16		13
14		8
12		7
10		5
234		168
21.3	Average	15.3
6.7		5.1

The probability factor is 2.31, indicating a significant difference in the length of time since graduation from medical school. Therefore, it is of great doubt whether this study has shown a difference to exist between internists and general practitioners. Rather, the data suggest that internists show up better only because they happened to have been out of school for a greater length of time, on the average. Of course, it is possible that physicians who have been out of schoollonger show to better advantage only because they happen to be internists. This seems a remote possibility, however. The practice of internal medicine is very similar to general practice. As one

internist commented lightly when asked a filter question on whether he was an internist or general practitioners, "Is there a difference?"

Group Practice versus Single Practice

The physicians were classified as to whether they had a single practice or participated in a group practice with one or more other physicians. While it would have been more logical to use a larger number of categories, the small sample size made this unfeasible. Table 17 shows the breakdown of single and group practices into the upper and lower groups as determined in the ranking process.

Table 17

New Pharmaceutical Acceptance Classified by Type of Practice

Type of Practice	Upper Group	Lower Group
Single	3	4
Group	8	7
	11	11

Again, these figures are statistically insignificant. Table 18 and Chart 8 show the results of the same type of analysis as that applied to internists and general practitioners.

Here, it appears as though physicians in group practice do, in general, start using new pharmaceuticals before those in single practice. However, this gap closes rapidly, and

Chart 8

A Comparison of New Pharmaceutical Acceptance by Single and Group Practitioners

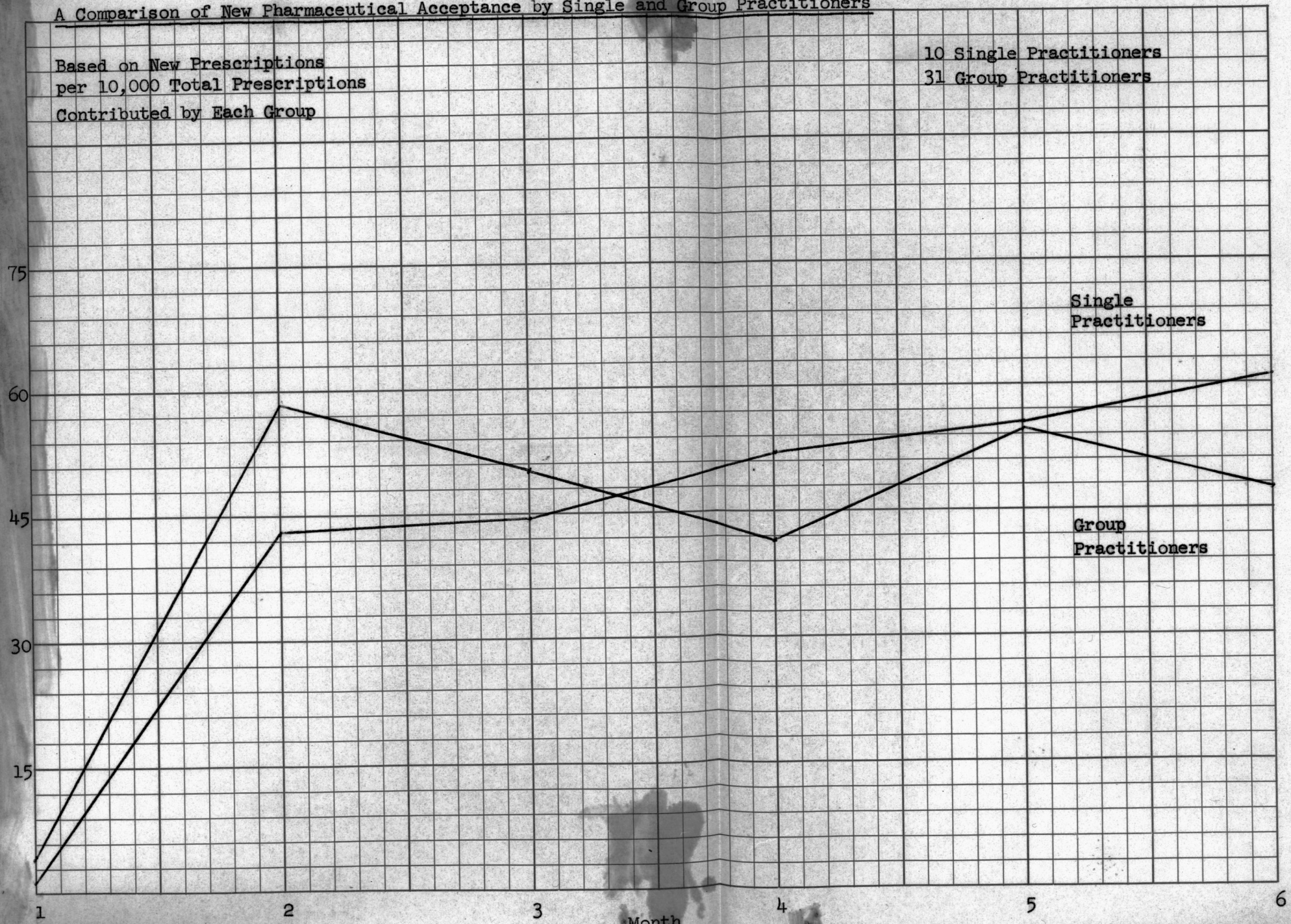


Table 18

A Comparison of New Pharmaceutical Acceptance by Single and Group Practitioners

Month	Prescriptions per 10,000 Total	
	Single Practitioners(n=10) 5427 Total Prescriptions	Group Practitioners(n=31) 18,154 Total Prescriptions
1	1.8	3.9
2	42.4	58.4
3	44.2	50.1
4	51.6	41.9
5	55.3	54.5
6	60.8	47.9

by the end of the sixth month the physicians in single practice seem to have a wider acceptance. This possibly indicates that physicians in single practice are a bit slower in accepting new pharmaceuticals, but once they use these products, they do so at a higher rate. The initial edge of group practitioners seems rather small.

The data here are not clear cut, and are based on a relatively small sample, therefore, these results must be considered tentative at best.

There is some evidence to suggest that, while physicians in group practices may not necessarily be more prolific prescribers of new pharmaceuticals, they do tend to have similar prescribing patterns in regard to the number of new pharmaceuticals prescribed as other internists and general practitioners in the same group practice. Table 19 illustrates

Table 19

A Comparison of Physicians in Group Practices

	Number of Ranked Physicians in Group	Total Number of Physicians in Group	Rank
Group 1	3	16	
Physician A			13
Physician B			32
Physician C			35
Group 2	4	22	
Physician A			8
Physician B			11
Physician C			25
Physician D			28
Group 3	3	5	
Physician A			4
Physician B			9
Physician C			18
Group 4	2	2	
Physician A			34
Physician B			39
Group 5	3	3	
Physician A			25
Physician B			33
Physician C			41
Group 6	2	2	
Physician A			22
Physician B			24
Group 7	2	4	
Physician A			21
Physician B			40
Group 8	2	9	
Physician A			29
Physician B			36

this by comparing situations in which two or more of the 41 ranked physicians are members of the same group practice.

In six of the eight cases, every physician in a given group falls in the same half of the ranking scale.

The two groups in which the most variations occur are the largest clinics in Madison. Even in these two groups, some similarity does exist. In group 1, two of the three physicians rank extremely close together. It was determined during the interviews that these two physicians have a close personal association. Furthermore, their offices are located directly across from one another. In group 2, the two high ranking physicians have offices in close proximity. Actually, all physicians in this clinic fall within 20 of each other on the ranking scale.

The data then suggests that physicians in smaller group practices tend strongly to have the same habits toward writing prescriptions for new pharmaceuticals. This similarity may be promoted to a great extent by the close contact these physicians have with one another. A possible reason for this being less pronounced in larger group practices is that contacts between individual physicians belonging to the same class of practice may not be as close, owing to the size of the clinic. There is a greater chance for varying attitudes toward new pharmaceuticals to be present.

It should be reemphasized that the results of these

close associations need not necessarily result in increased usage of new pharmaceuticals. On the contrary, conservatism may often result.

Other findings

Unfortunately, the small sample resulted in many findings which were statistically insignificant. Table 20 summarizes these findings.

Table 20

Summary of Remaining Data on Backgrounds

Background Factor	n_1*	σ_1*	n_2*	σ_2*	Probability Factor
Weekly patient load	83.7	38.6	99.3	32.4	.32
Number of memberships in professional societies	2.1	1.2	1.7	1.0	.82
Number of post-graduate and refresher courses attended over a five year period	7.6	5.2	7.7	4.1	.03
Number of hospital staff memberships	1.8	.7	2.3	.8	1.51
Number of hospital committee memberships within the past two years	1.7	1.1	1.9	1.3	.37
Graduation from Eastern medical school	27%		36%		.90
Membership on University of Wisconsin teaching staff	36%		36%		.00
Service in the armed forces medical corps	64%		64%		.00

*n_1 is the upper group average. σ_1 is the standard deviation of the upper group.

n_2 is the lower group average. σ_2 is the standard deviation of the lower group.

There are several comments necessary regarding these findings. The large number of factors which are statistically insignificant is due in part to the small sample size. With a larger sample, some of the factors with relatively high probability factors could prove significant. However, armed forces medical corps service, membership on the University of Wisconsin teaching staff, and the number of post graduate and refresher courses attended have such small probability factors that it seems quite unlikely that these factors are important in determining the rate at which physicians prescribe new pharmaceuticals.

It was desired to determine, along with the number of committee memberships, the influence of membership on the pharmacy committee on physicians' rates of new pharmaceutical acceptance. Unfortunately, only one physician had served on this committee. Thus this factor had to be omitted.

As regards hospital association; it is interesting to note that members of the lower group seem to belong, on the average, to more hospital staffs than members of the upper group. The relatively high probability factor presents an argument to the statement that physicians associated with a greater number of hospitals accept new pharmaceuticals more rapidly. It does not, however, prove the opposite. No significant data were found indicating association with a given Madison hospital had any effect on a physician's

tendency to write prescriptions for new pharmaceuticals.

The border line for determining whether a physician came from an Eastern or Western medical school was the Illinois-Indiana state line.

Information was also sought on medical convention attendance and staff meeting attendance. In the first instance, all physicians had been to a convention within the 12 months prior to the interviews. The reliability of the answers to the second question is in doubt. Practically all physicians in both the upper and lower groups claimed nearly 100% attendance.

CHAPTER VI

PHYSICIANS' ATTITUDES AND OPINIONS

In the preceding chapter it became apparent that it is difficult to predict physicians' acceptance of new pharmaceuticals purely on the basis of background characteristics.

In several cases, data on the attitudes and opinions of physicians had to be brought in to present a more complete picture.

In this chapter the physicians' attitudes will be analyzed in regard to various techniques used to promote new pharmaceuticals. In the light of these attitudes, the various promotional methods will then be compared and evaluated. Physicians' attitudes toward the rate of introduction of new pharmaceuticals will also be illustrated.

Physicians were asked whether they liked to evaluate personally the efficacy of new pharmaceuticals in their practices, as a further check on the methodology used in choosing the upper and lower groups. The physicians generally were extremely cautious when questioned on this point. Few unqualified affirmative answers were given. Perhaps physicians did not want to give the impression that they,

as one physician put it, "jump headlong" into prescribing new pharmaceuticals, without being quite sure about the reliability of the product. The reputation of the firm marketing the product was considered important in this respect by more than one physician. Table 21 seems to support the methodology used in choosing the upper and lower groups. The physicians usually seemed to know into which group they fell.

Table 21

Attitudes Toward Testing the Efficacy of New Pharmaceuticals

Answer	Upper Group	Lower Group
Affirmative	3	1
Cautiously affirmative	7	1
Negative	1	9
	11	11

The Rate of Introduction of New Pharmaceuticals

Physicians interviewed felt, generally, that it is very difficult to follow all developments in new pharmaceuticals, due to the rapid rate of introduction. As previously noted, new products of all types introduced nationally numbered 400 in 1957. Only 51 of this number were new single chemical entities. Even some of these were just structural modifications of older products. Examples are Elorine Chloride, Hydeltrasol Opthalmic Solution, and V-Cillin-K.

Repetitions and reduplications, which make up a large part of the new product releases each year were criticized by the majority of physicians interviewed, although some recognized that the strongly competitive features of the pharmaceutical industry were partially responsible.

This is a sample of replies to the question, "How do you feel about the rate at which new pharmaceuticals are being marketed?"

"Terrific-lot of repetition"

"A flood of some types of drugs"

"Confusing"

"Too fast"

"Too fast-can't keep up"

"Ridiculous-deluged"

"Terrible-duplication is nonsense"

"Too many useless drugs"

"Not enough trial"

"Astounding"

"Too much reduplication"

"Too much reproduction"

"Too fast to keep up with"

"Phenomenal"

"Overwhelming"

"Flood of drugs here today, gone tomorrow"

"Too many, too often"

It appears that many physicians feel rather overwhelmed. The huge amounts of promotion which accompany the introduction of many new pharmaceuticals, as well as products already on the market, adds to the problem. For example, it has been estimated that physicians receive 50 to 100 pieces of direct mail advertising per week.[8]

Promotional Methods

As noted above, physicians are being deluged by new pharmaceuticals. Many promotional methods accompany these new products. Detailing, direct mail advertising, journal advertising, and sampling, done in conjunction with detailing and direct mail advertising, are probably the most useful methods. How do physicians feel about these various methods, and which ones do they consider most useful? Perhaps clues to new pharmaceutical prescribing habits can be found by determining various attitudes toward promotional methods.

When questioned as to what source of information initially influenced them to try the last new pharmaceutical they used, physicians had a variety of replies. These replies are illustrated in Table 22. It should be noted that when, as occurred in several cases, two or more sources were named, the first source mentioned was recorded.

The difference percentagewise of the use of detailing by each group is not significant. The probability factor

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[8]Ben Gaffin and Associates, op. cit., p. 20.

Table 22

First Source of Information on Last New Pharmaceutical Used

Source of Information	Upper Group	Lower Group
Detailman	5	7
Another physician	2	0
Journal article	1	3
Direct mail advertising	1	0
Journal advertising	0	1
Other	2	0
	11	11

is .91. In both groups, the detailman is considered the best initial source of information on new pharmaceuticals, being used 12 out of a possible 22 times. There were several physicians, however, professing an extreme dislike and distrust in detailing. It does appear as though the physicians in the upper group have a greater array of information sources. However, the sample is not of sufficient size to allow any definite conclusions to be drawn on this point.

Information obtained in this study indicates that general practitioners rely on detailmen as the initial source of information to a greater extent than do internists. The detailman was the first source of information for 8 of the 11 general practitioners. This was only true 4 times in the case of internists. The probability factor of 1.6 suggests that this might have been proven statistically significant had a larger sample been used. It should be

emphasized that these results do not indicate whether later sources of information were sought or received before trial of the product, or how long the physician waited after receiving the initial information before trying it.

Table 23 summarizes the percentage of the 22 interviewed physicians using each promotional method.

Table 23

First Source of Information on New Pharmaceuticals(n=22)

Source	Percentage of Total
Detailman	54.5
Journal articles	18.2
Other physicians	9.1
Direct mail advertising	4.5
Journal advertising	4.5
Other	9.1
	99.9*

*The deviation from 100% is due to rounding errors.

According to figures released in 1952, the following were promotional expenses for different forms of advertising by the pharmaceutical industry.[9] The reliability of these figures is uncertain, and they are somewhat dated. However, they should give a fairly close approximation as to the

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[9] Ibid., p. 20.

various percentages spent on each type of promotion. Table 24 illustrates these promotional expenses.

Table 24

Expenditures on Pharmaceutical Promotion

Promotional Method	Expense in Dollars	Expense Percentagewise
Detailing	100,000	77
Direct mail advertising	22,500	17
Journal advertising	7,500	6
	130,000	100

The return per dollar of advertising expenditure can be calculated from these figures. Since the expenditures column is equal to 100%, the data from this study must be set equal to 100%.

Table 25

Return per Promotional Dollar Invested

Promotional Method	Percent Influenced by Method	Adjusted Percent	Percent of Promotional Expense	Return per Dollar Invested
Detailing	54.5	70.9	77	.92
Direct mail advertising	18.2	23.7	17	1.39
Journal advertising	4.5	5.9	6	.98
	77.2	100.5*	100	

*The difference between this figure and 100% is due to rounding errors.

On the basis of this evidence it would first appear that detailing is a relatively inefficient form of promotion. But is it? If detailing were curtailed or discontinued what would happen to the other methods of promotion? Their efficiencies would drop as they became more overloaded. For example, how much more direct mail advertising could the market absorb? It follows that physicians would be even more overwhelmed than they are now, since the average physician spends only about 30 minutes per week with detailmen.[10]

The detailmen often act as a type of digest for the physician giving out information on important new pharmaceuticals, although admittedly, the information may be biased. It appears then that, although detailing returns less per dollar spent than other promotional methods, the expense is justified, considering the number of physicians using the detailman. The other methods may be relatively efficient up to a given expenditure. However, it is doubtful whether a similar expenditure on any other promotional method could approach the results obtained by detailing.

How do physicians feel about various methods of promotion? Table 26 summarizes their attitudes.

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[10] Ibid., p. 19.

Table 26

Physicians' Attitudes Regarding Promotional Methods

Promotional Method	Upper Group	Lower Group
Detailing		
Good	7	7
Of some use	2	2
Of no use	2	2
Journal advertising		
Good	~~4~~ 0	~~4~~ 1
Of some use	~~0~~ 4	~~0~~ 4
Of no use	7	6
Direct mail advertising		
Good	2	0
Of some use	3	4
Of no use	6	7
Sampling		
Good	2	3
Of some use	7	6
Of no use	2	2

The two groups were very similar in attitudes. Physicians felt, in general, that detailmen were courteous and did a good job, although, as previously stated, several manifested an intense dislike for detailing.

Quite a few physicians stated that journal ads were of no use in prescribing but should be continued, as they help support medical journals. These answers were not considered to be affirmative. They were put in the "Of some use" category.

Very few physicians had many kind words to say on the subject of direct mail advertising, and only two had no

unfavorable feelings toward it. Some of the physicians interviewed do not even read the ads, but automatically file all or most of them into the waste container. This is undoubtedly the result of the tremendous amount of direct mail advertising done today. The great volume seems to have greatly diluted its effectiveness as a source of information on new pharmaceuticals.

The attitudes on sampling were so varied that any classification is difficult. Those physicians favoring it "with reservations" differed greatly in these reservations. Some wanted larger amounts of each pharmaceutical, while others wanted smaller amounts. Many wanted samples only when requested.

These attitudes, as summarized in Table 26, reflect the fact that, not only do physicians use the detailman most often as the first source of information on new pharmaceuticals, but they feel that detailing is the most useful promotional method.

It can then be concluded that detailing as a promotional method for new pharmaceuticals seems to justify the expense required to maintain it. Expenses would more accurately be measured against sales prompted by the detailing effort if it were possible to calculate this. Detailing's initial expense undoubtedly pays off for the manufacturers in the long run.

The Retail Pharmacist as a Source of Information on New Pharmaceuticals

When physicians were questioned about using the retail pharmacist as a source of information on new pharmaceuticals the following results, as summarized in Table 27, were obtained.

Table 27

Usage of Retail Pharmacists as Sources of Information on New Pharmaceuticals

Usage	Upper Group	Lower Group
Use often	1*	3
Use occasionally at most	10	8
	11	11

* This physician is a member of a clinic which employs a pharmacist. All promotional calls and material go through this pharmacist. Therefore, he is the chief source of information for the physicians at the clinic. Whether he should be considered a retail pharmacist in the light of the meaning of the question is of some doubt.

Several of the lower group did place a relatively high value upon the retail pharmacist as a source of information on new pharmaceuticals. The difference however, was not statistically significant.

Information generally requested is on dosage form availability. There appears to be little use being made of the pharmacist as a "therapeutic consultant."

It should further be noted that many of the physicians stated they use one specific source of information when needed. Usually this is a prescription or hospital pharmacy.

Reasons for the lack of usage of the pharmacist as a "therapeutic consultant" varied. Here is a sample of replies:

"You learn more from the detailman"

"Has the same information the doctor possesses"

"PDR is a better source"

"Some don't know too much"

"They have to look up the information too"

"Pride"

"It's not their job"

"Pharmacists don't know much - need retraining"

"Many other sources available"

"Too busy selling"

The question now remains as to the future of the retail pharmacist as a source of information on new pharmaceuticals. Physicians seem to have greater confidence in hospital pharmacists and those who practice at "professional" pharmacies. It is possible that these sources may increase somewhat as information sources. However, in this writer's opinion, the general outlook for retail pharmacists, particularly those in "traditional" pharmacies is not bright. Not only are many physicians hesitant about "lowering themselves,"

to seek a pharmacist's advice, but many pharmacists are not able to give this advice. Pharmacists are generally just as busy as physicians, often in non-professional capacities. Many retailers have trouble keeping up with new pharmaceuticals in a way to be competent consultants, and it is questioned by this author whether all retail pharmacists put much effort into keeping informed on the latest therapeutic advances. To add to this, pharmacists generally receive less information than physicians.

This is not to say that the pharmacist should not have information available when it is requested. Rather, it is a prediction that most pharmacists will not see their roles as "therapeutic advisers" increase. Most of the information requested on new pharmaceuticals shall continue to be that on dosage form availability.

CHAPTER VII

SUMMARY

In obtaining the data for this study, a prescriptions survey covering 23,581 prescriptions written by 41 internists and general practitioners was made. Each physician was ranked on the basis of the ratio of prescriptions written by him for new pharmaceuticals to the total prescription volume he contributed to the study. The 1957 de Haen list of new single chemical entities introduced nationally was used as the source of new pharmaceuticals. The 12 highest ranking physicians and the 12 lowest ranking physicians were selected to be interviewed. Eleven responses were obtained from each group.

A Comparison of the Acceptance of Various New Pharmaceuticals

There is a definite seasonal variation in the total number of prescriptions written by internists and general practitioners, based on the prescription sample covered. Considering the daily volume of prescriptions, February was found to be the peak month. Prescription volume fell to a low during the mid-summer months.

Fifty one new single chemical entities were marketed nationally in 1957 by 28 firms. Ataraxics were the most

popular class of new pharmaceuticals, with six being marketed.

The most widely accepted products marketed on the basis of this study were as follows:

Ranked on the Basis of Total Prescriptions Written	Ranked on the Basis of Number of Physicians Prescribing
1. Darvon, Darvon Compound	1. Diuril
2. Diuril	2. Darvon, Darvon Compound
3. Orinase	3. Orinase
4. Ultran	4. Ultran
5. Combid, Darbid	5. Kynex
6. Suavitil	6. Suavitil
7. V-Cillin-K	7. Combid, Darbid
8. Kynex	8. Medrol
9. Robaxin	9. Robaxin
10. Medrol	10. V-Cillin-K

The new pharmaceuticals covered in the study often seemed to reach a peak acceptance in the second or third month following introduction, then slump before rising again in usage. Possible reasons other than the seasonality of some products are:

Some physicians want to test the effects of the products before further use.

Some physicians do not have success with a given product, therefore discontinuing use after an initial trial.

Other competing products enter the field.

Probably, all three explanations are true in part.

Figures on later drug usage indicated that pharmaceuticals faring poorly during the first six months following introduction will not generally attain the popularity

enjoyed by the products having the widest original acceptance. Some products, especially those with a low market potential, which eventually reached some level of usage did not appear in individual prescription files until after six months from the date of introduction.

A comparison of tranquilizers introduced in 1957 showed Ultran to be the most widely accepted among the physicians studied. The tranquilizer field appeared rather saturated by the end of 1957.

Variations In Backgrounds Between Physicians

It appears that physicians who have been out of medical school for a long while are more apt to write prescriptions for new pharmaceuticals than more recent graduates. This, of course, is tied in closely with age. A possible rationalization for this difference is that physicians out of school longer can no longer rely on therapeutic principles learned at school. Their education has no great hold on them. They place a greater reliance in detailmen, many of whom they have known for years. More recently graduated physicians are more secure in using the therapeutic techniques learned at school. Often, these are very conservative. They do not place as much faith in detailing, perhaps having a more self-assured attitude than their older counterparts.

Internists seemed more prone to write for new pharmaceuticals than did general practitioners. However, the

internists had, on the average, been out of school longer than the general practitioners. Therefore, the difference was probably due to this factor. Thus, it cannot be said, on the basis of this study, that internists adopt new pharmaceuticals more rapidly than general practitioners.

The data relating single practice to group practice was not completely clear. Therefore, conclusions drawn must be considered tentative at best. It appears as though physicians in single practice are a bit lower in accepting new pharmaceuticals than physicians in group practice. This difference disappears rapidly as physicians in single practice use the new products more heavily once acceptance does occur. Evidence does indicate that physicians in a group practice have similar prescribing habits as their colleagues in that practice. This similarity may be due to the close contact these physicians have with one another. This association does not necessarily result in increased use of new pharmaceuticals.

Results obtained in attempting to determine whether the following factors influence new product acceptance were statistically insignificant.

Weekly patient load
Membership in professional societies
Number of post graduate and refresher courses attended over a five year period
Number of hospital staff memberships

Number of hospital committee memberships
Graduation from an Eastern medical school
Membership on the University of Wisconsin teaching staff
Service in the armed forces medical corps
Staff meeting attendance
Medical convention attendance

It is possible some of these factors could have been proved of statistical significance had a larger sample been used.

Physicians' Attitudes and Opinions

The detailman is the most important initial source of information on new pharmaceuticals, according to evidence presented in this study. There is a possibility that general practitioners are more dependent on the detailman for this information than are internists.

Although the return per dollar invested is lower for detailing than with direct mail and journal advertising, it does not follow that detailing is a relatively inefficient form of promotion. Curtailing or discontinuing detailing would cause the efficiencies of the other promotional methods to fall. It is doubtful that expenditures, similar in magnitude to those necessary for detailing, on other promotional method would approach the results obtained by detailing.

In determining physicians' attitudes toward various promotional methods, it appears that detailing was the most highly thought of method. Journal advertising was thought

of highly by some physicians also, although not as many as approved of detailing. Direct mail, undoubtedly due to its great volume, was generally considered of little use. There were agreat many attitudes present regarding sampling. Most physicians interviewed thought it of at least some use.

It can then be concluded on the basis of this study that detailing as a promotional method for new pharmaceuticals justifies the expense needed to maintain it.

The retail pharmacist is not generally thought of as a good source of information on new pharmaceuticals. Most of the small use made of him by interviewed physicians is in regard to the availability of dosage forms, not as a "therapeutic consultant." The outlook, in this writer's opinion, for increased use of the retail pharmacist as a "therapeutic consultant" is not bright, especially for those pharmacists practicing in "traditional" pharmacies. Pharmacists are often too busy to keep up properly with new pharmaceutical developments. Some doubt exists as to whether all pharmacists would if they had the opportunity. Furthermore, the physician often receives more information on a given new pharmaceutical than the pharmacist. While the pharmacist should have the information on hand when requested, chances are that most of the requested information will continue to be that on dosage form availability.

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