

the physician and pharmacist and the bringing to their attention the U. S. P. and N. F. preparations. There were 56 eight-ounce bakelite capped bottles and 11 sixteen-ounce bottles, all neatly labeled with the imprint of The Virginia Pharmaceutical Association on each label. The high-powered lamp above caused the different colored preparations to show up most brilliantly.

Each physician was given a small booklet, published by the N. A. R. D., on some important U. S. P. and N. F. preparations.

Many questions were asked and many comparisons made between these preparations on exhibit, and others of a similar character.

It is a big step toward getting back to old-time pharmacy. Now that this work has been started, there should not be any let up, until every physician in the United States realizes that it will be to the advantage of every one concerned to prescribe only U. S. P. and N. F. preparations.

HOW THE NATIONAL DRUG STORE MERCHANDISING SURVEY WILL BENEFIT RETAIL DRUGGISTS.*

BY FRANK A. DELGADO.

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I believe that all present are familiar with The National Drug Store Survey now being conducted by The National Drug Store Survey Committee, with the United States Department of Commerce coöperating. Your trade journals and the house organs of the chemical and pharmaceutical houses have since last fall endeavored to keep you informed regarding the objective and operation of the Survey and believing, as I do, that the most successful druggists read their trade journals and attend their state and national conventions, it seems that there is very little else for me to relate other than to point out how some of these facts may be applied in such manner as to be practical and direct benefit to the retailer and other branches of the drug industry.

I was serious in the remark I made regarding the value of trade journals, and in connection with our preliminary work in St. Louis we had it brought home rather forcibly. We were about ninety miles south of St. Louis looking for a typical country store and found an extraordinarily attractive one. It actually excelled many of the drug stores encountered in St. Louis, or for that matter, any large city. It was well lighted and the window displays, as well as the store interior were faultless. The proprietor was crippled and seated in a wheel chair. When we expressed surprise at encountering such a modern and beautiful store at such a distance from a large city, he informed us that a great deal of the credit was due the trade journals which he read most assiduously while confined to his wheel chair and that when he read an exceptionally good article about any department of the drug business that he thought could be applied to his own store, he gave it a trial. The moral of this anecdote is obvious.

Before discussing the application of the Survey, I would like to quote Mr. C. C. Concannon, Chief of the Chemical Division of the Department of Commerce, who in a recent address remarked "During the conduct of the National Drug Store Survey, no phase of drug store operation will receive more detailed and careful attention than its professional side."

I do not believe that any one doubts the value of facts and as I previously remarked, I desire to discuss the application of the facts that we are discovering in the 14 stores that are being surveyed in St. Louis, but before doing so, I want you to bear in mind that each of these drug stores is a prototype of thousands of others throughout the country. Facts developed from each of the Survey stores are adoptable to every store of its type in the country.

About the first thing I want to tell you about the National Drug Store Survey is that if it accomplishes nothing else, its undertaking will be justified by the fact that preliminary figures decidedly indicate that the average drug store has not turned into a mere lunch counter or small department store and that drugs, chemicals, proprietary medicines and hospital supplies account for 46 per cent by value and 63 per cent by number of items of the 11 usual commercial type of drug stores now being surveyed in St. Louis. The percentages mentioned are, of course, only preliminary, as the Survey only got under way last April; likewise any other figures that I may quote are not to be considered final, as they will be based upon preliminary findings.

* Section on Commercial Interests, A. P. A., Miami meeting, 1931.

One of our principal sources of information for the facts that we propose to place at your disposal is about 100,000 stock cards. Such a card has already been filled out for every item in 13 of the 14 stores. These commodity cards will be the central points around which our commodity cost are molded. The card for each commodity, in each store will show its average inventory, number of purchases, average purchase, source of supply, discount, number of sales, selling price, value of sales, cost of sales, gross margin, operating expense, net profit and turnover. In addition to this information for each commodity handled, an analysis will be made of merchandise losses through spoilage, as well as an analysis of returned goods and discount sales, *i. e.*, sales to doctors, employees and others receiving special discount prices.

A complete inventory of the stores was the first step in the actual field work and this will be repeated next October and at the close of the study. This inventory has thrown light on the number of items a drug store stocks, a subject that druggists have discussed *pro* and *con* for a number of years and about which there seemed to be wide divergence of opinion. For example, a survey made by McKesson and Robbins stated that the average capacity of each drug store is about 15,000 different items, as against the 50,000 which are sold through all drug stores. However, for the 11 independent stores that we are surveying, the number of items was much less, ranging in number from approximately 2700 in the smallest inventory, to about 9000 in the largest, while sales ranged from \$18,500 to \$77,000 yearly.

Incidentally, the store with 2700 items achieves the excellent record of nearly nine turnovers a year and practically equals the sales of two of the stores with from 5000 to 10,000 items, and actually has larger sales than two of the other stores.

When I state that a store has a certain number of items, I do not necessarily mean brands or products; for example, if a proprietary remedy or chemical is put up in three sizes, we have a card for each size. Naturally, all purchases made during the period of the survey will be posted, by source, to these cards and, as a result, we will definitely be able to tell just which brands and sizes are selling the best and the turnover and profit in each.

For the present these cards are being filed alphabetically under eight major departments. They are Prescriptions, Proprietary (patent) Medicines, Hospital Goods, Toilet Preparations and Articles, Tobacco, Confectionery, Fountain and Sundries.

The value of the cards to manufacturers has already been demonstrated several times. For example, an executive of a large proprietary laxative pill concern called at the office of the Survey in the St. Louis College of Pharmacy and was informed that while information regarding any particular brand could not be divulged, it would be possible to show at the end of the Survey just how the sales of laxatives were divided as to form, that is, liquids, salts, pills, tablets, etc. A representative of a toilet preparation house manufacturing a deodorant was agreeably surprised to hear that these stock records would enable him to ascertain in what form body deodorants were most popular, that is, liquids, creams or powder.

Still another instance of the practical value of these cards is illustrated in some facts regarding the stock of crude botanical drugs and allied natural products are carried in drug stores nowadays. None of the 11 drug stores being surveyed had less than 62 cards listing crude drugs, gums, balsams, spices, waxes and related products, whereas one store had as many as 154. This does not necessarily mean that each card represents a different item, inasmuch as in some cases one item was represented by 2 or 3 cards, due to the fact that the substance was handled in different forms, *i. e.*, powder or leaves, or in different sizes, such as ounce packages and bulk.

It is interesting to note that it is not necessarily the old-fashioned drug stores that carry the largest stock of crude drugs; as a matter of fact, it was such a store that stocked the minimum number, whereas a modern store at an important traffic center carried the largest number, followed by a store in a fashionable suburban neighborhood with 139.

The inventory value of those products for four of the stores that handled 68, 80, 93 and 115 different kinds was valued at \$16.12, \$20.68, \$31.97 and \$34.00, respectively. While at first glance these figures may seem very low, being an average of approximately only \$26.00 per store, their importance becomes greater when it is considered that if this is representative of the country as a whole, the 60,000 or more domestic drug stores stock approximately \$1,560,000 worth of these products. This figure is not a negligible percentage of our total domestic production and foreign trade in crude drugs and related natural products.

Time does not permit of relating the numerous other important facts that these cards are designed to reveal; it will suffice to say that when they are finally filled in and tabulated they should point out the source of profit and loss in a drug store, as well as those items which are carried at a loss which loss must be made up on other items.

In addition to the inventory cards that I have just been describing, there are a number of other cards and forms. Each one is designed to reveal a number of important facts when at the end of the year they are all filled in and tabulated.

One of the Department of Commerce officials is W. H. Meserole, Store Management Expert, who is in charge of some of the most interesting studies being conducted by the Survey. I will touch upon a few of them. First there is the time check of sales transactions. A trained observer with a stop-watch and a pack of special forms will record details of every transaction from the time the clerk begins to wait on the customer until he has finished and is ready for another one. Of course, the observers will not be able to check every customer in this way, but in the course of a few months they will be able to get a good picture of the selling activities of drug store clerks. After checking off the sex and apparent age of the customer and the code number of the sales person, the observer notes the article asked for, whether or not brands are specified, whether the customer bought anything and whether it was the brand for which he asked. He also checks whether the clerk persuaded or advised the customer in making the purchase, if the sale was made at a busy time, if the article was on special sale, if it was processed at the time of the sale, if it was packaged and if it was delivered. The value of the sale is also recorded. At the same time he is using the stop-watch to record the selling time, wrapping time, time spent in receiving payment and the total time consumed in the transaction. And if this were not enough, the observer is required to write remarks about the selling efforts of the clerk and reasons for his success or failure.

By this procedure it is aimed to secure a check on the amount of underselling or overselling done in different types of drug stores and toward different types of customers. It will also provide a check on brand substitution and the value of special sales and of sales effort by clerks.

The early part of this month Mr. Meserole engaged 30 young men for an intensive soda fountain study. The object of this campaign will be to study each soda fountain intensively for six weeks, including Sundays (3 in the summer and 3 in the winter), from the time the store opens until it closes. Each transaction that goes over the fountain will be recorded, as well as the total cost of each operation, and of all merchandise that goes into the sale. The inventories and the purchases over that period of time will be known and we will definitely be able to tell you whether soda fountains are profit or loss departments.

Mr. Meserole, is also making a traffic check or study and has certain forms whereon will be recorded, by different periods of the day, the number and kinds of persons passing the store and whether they pass without looking into the window; look into the window and then pass on; look into the window and then enter; or enter the store without noticing the window. This naturally leads into the study of the pulling power of different types of window displays.

Preliminary results of this study would seem to indicate that only a small percentage of passersby are looking at drug store windows. Perhaps the remedy is to have fewer of the stereotype lithoprinted windows that are seen so frequently these days and substitute some educational window displays that will impress not only the customers, but secure the good will and coöperation of physicians as well. There is a splendid article by Prof. Anton Hogstad, Jr., on the subject in the July issue of *Merck's Report*. I have seen some of the window displays referred to in the article and in my opinion an occasional window of this character will not only serve to attract the favorable attention of the passersby but aid materially in establishing the standing and professional character of the pharmacy making such displays. Remember that in the last 10 or 15 years merchandise that you used to consider exclusively yours is to-day being sold in 5 and 10¢ stores, department and other kinds of stores. However, prescriptions, biologicals and certain other scientific products are still the prerogative of the pharmacist. Therefore, I really don't think you will go wrong if in addition to having an occasional professional window you resurrect that old symbol of pharmacy—the show globe, or the gilded mortar and pestle—or both—and display them prominently.

Another of the Department of Commerce officials who is bending every effort to make the Survey a success is Nelson Miller. Mr. Miller has a multiplicity of tasks assigned to him, as

well as the responsibility of engaging local personnel and office administration. It was up to him to see that the stores selected were well scattered over the city of St. Louis and that every distinct type of community was represented. One of Mr. Miller's studies that I believe would interest you the most, as its application is readily perceptible, is that regarding special sales.

All special sales in the stores are being checked and incidentally, there is hardly a day that passes in St. Louis—and many other cities—but that the consuming public is faced with sales. Frankly, they are not a big success in the St. Louis independent stores under survey. Perhaps results are the same everywhere else. Maybe the consumer is getting "fed-up" with sales. The experience of our most progressive independent proprietor, who went to great effort to prepare a special anniversary sale, was that the sale netted him on sales items \$123. The discount that he gave during the sale amounted to \$17. The cost of advertising and the cost of souvenirs that he gave away ran his total cost, including his discounts, to \$117. As a result of that sale he sold \$200 of additional merchandise in his long profit merchandise, that is, merchandise which he might not have sold had it not been for the special item on sale.

We compared his normal sales for that week end period with the sales stimulated by the special sale. We found that he increased his sales to \$200 at a cost of \$117. The gross margin that he made on that \$200 increase on long profit merchandise amounted to about \$67. In other words, it cost him \$117 in discounts and other costs to get a gross increase of \$67. Obviously, it did not pay.

Mr. Miller finds that staple items sell best on sales, particularly antiseptics, soaps, tooth paste, tooth brushes, rubbing alcohol, aspirin tablets, epsom salts, sodium bicarbonate, laxatives, candies, talcum powder, face powder, cotton, gauze, bandages, adhesive plasters and razor blades. On the other hand he found poor results on such items as earache remedies, toothache drops, larkspur lotion, etc. Yet some druggists actually spend money advertising sales of these items, which money is wasted unless toothache and earache becomes a subject of daily occurrence, which God forbid.

There will be a wholesale study under the direction of J. R. Bromell, the department's wholesale expert. It will consist of two steps. The first step will be a study of wholesaler-retailer relations, and will comprise an analysis of all purchases made by 300 retail druggists in the St. Louis market. Retailer purchases will be analyzed in relation to such characteristics as the retailer's total volume, type of store and character of community. The second step will be a study of wholesaler-manufacturer relations, and will cover three big wholesalers and will seek to determine the channels by which drug products reach the market and to define the position of the wholesale druggists as a service agency for the retailer.

A very important phase of the Survey, particularly to the retailer, is that part being conducted by B. B. Aiken, Merchandising Research Specialist of the Department. Mr. Aiken originally planned to study consumer demand through interviews with 200 selected consumers chosen from the neighborhood surrounding each of the ten stores. However, he may substitute a questionnaire containing 50 questions to be mailed to several thousand consumers. If this does not prove satisfactory, the original plan of personal interviews will be carried out.

Field work has been started in the Business Failure Study. This work is being actually conducted by R. T. Williams, who is working under the direction of Victor Sadd, of the Department, in charge of Bankruptcy and Credit Studies. Much valuable data has been collected to date, which will go into the report of business failures. This subject will be the first available final report on the Survey.

Other features of the Survey will be a credit study by Dr. W. C. Plummer. Dr. Plummer was loaned to the Department by the University of Pennsylvania for a National retail credit survey.

The problem of store location will be in charge of Miss I. K. Rolph, an expert in this phase of merchandising. Part of her work will consist of a study of the relationship of all St. Louis drug stores, both independent and chain, to the population of the city, traffic facilities, residence rentals, zoning laws and other data obtainable from census figures and other published works.

A study of great importance to the independent merchant will be conducted by Dr. S. L. Kedzierski, of the department staff, who will work out budget and control methods suitable for the average drug store so that when the Survey is finished any retailer can get up a system whereby he can learn for his own store the same things the department has learned from the 11 sample stores.

Other department experts will make studies of store arrangements and sales promotional methods. Both of these projects will be worked out with the proprietors of the stores studied and at their expense.

I now come to the prescription department. This phase of the Survey will be under my supervision. Prescriptions and prescription department items may not be responsible for even 10 per cent of your gross receipts, although for urban centers I am convinced they are approximately double this figure but their importance cannot be measured only in dollars and cents; it is the one thing that lifts the drug stores out of the field of pure commercialism and entitles it to professional recognition.

The Department of Commerce has, from the inception of the Survey, tried to make it clear that the professional side of the drug store was to receive the greatest possible attention. We recognize that the Prescription Department is really the base or foundation of the drug store and that no matter how good a merchandiser a pharmacist may be, he is first of all a pharmacist, a professional man and as such he renders a service to the community quite different from that of the ordinary storekeeper.

One of the first steps that I made to try and assure the success of the prescription study, was to secure the cooperation of such leaders of pharmacy as Professors E. Fullerton Cook, E. N. Gathercoal, R. P. Fischelis and others. These gentlemen were very helpful and some of them expressed the opinion that the study should be of incalculable value.

Quite recently Julius H. Riemenschneider and Samuel S. Henry of the National Association of Retail Druggists honored the office of the Drug Survey with a visit. I invited them to call attention to any important point in our prescription analysis which might have been overlooked, and I trust that you will do likewise.

A study will be made of the prescription department of the 11 usual commercial type drug stores, the two chain stores and a large professional drug store in a medical building. We will probably analyze from 35,000 to 40,000 prescriptions in these stores, in fact approximately 2000 prescriptions have been tabulated for each of the 13 stores up to this time, and we will analyze 5000 to 10,000 in the professional store beginning on or about the first of November. After the full number of prescriptions have been tabulated they will be analyzed and the information broken down to show the following:

The average number of new prescriptions filled per day, divided into narcotic and non-narcotic; also the average number of refills and liquor prescriptions.

The number filled for each month in the year, to show seasonal variation.

The form in which they are dispensed, such as liquids, tablets, capsules, ampuls, ointments, powders, suppositories, etc.

Nature or character of the prescription, that is, official (meaning United States Pharmacopœia or National Formulary), manufacturers' or proprietary pharmaceutical specialties, or combination of official and proprietary ingredients.

The average number of ingredients in each prescription, according to form.

The extent of compounding, if any.

The average price, according to form, and the factors upon which prices are based, such as the material, time, etc.

The percentage of prescriptions written in the metric system.

The number of prescriptions calling for capsules, when the druggist indicated the size of the empty capsule used.

The total number of physicians writing the prescriptions studied and the frequency with which each doctor's name appears on the prescriptions.

The extent of delivering prescription.

The extent of legibility and other information.

Some information regarding prescriptions is already available regarding the stores being surveyed. However, it must be understood that the figures given in no way represent a complete picture of conditions. They are too limited to be used statistically, except as indicating matters to be more thoroughly examined and in no sense final. In the 11 independent stores for which figures are available, the number of individual drug, chemical, galenic and pharmaceutical items on hand in the prescription department vary from 754 to 2351.

The store with the smallest number of prescription department items was in a neighborhood type of community with no physicians of the specialist type calling on it for service and with no hospitals in the vicinity. These facts alone, however, may not account for this surprisingly small number of prescription items, since this store's general policy is one of low inventory and fast turnover, the total number of items in the store being 2426 and its annual turnover about ten times.

When we have complete and final inventory figures for the Prescription Department, I think they will shed some very interesting light as to the extent pharmacists have invested in manufacturers' pharmaceutical proprietary specialties. Preliminary figures for four of our stores show the investment in these products amount to \$135, \$250, \$268 and \$429, respectively, or from 19 to 36 per cent of the total inventory value of the prescription stock of these stores, or an average of 29 per cent. Later on, when the percentage of these proprietaries entering into the prescriptions analyzed is known, we can better determine to just what extent these figures quoted were justified.

We have partially completed the prescription analysis for one store and find that in filling the 1200 prescriptions 524 different ingredients were used in 2480 separate quantities, or an average of 2.0 per prescription. The 1200 prescriptions were divided into 180 narcotic and 1020 non-narcotic prescriptions. The narcotic prescriptions averaged 3.1 ingredients each; the non-narcotic 1.9 ingredients each. Of the 524 ingredients, only 61 occurred more than ten times. The order of occurrence was as follows: 241 ingredients had an occurrence of only one; 78 occurred only twice; 48 occurred only three times; 37—4 times; 16—5 times; 13—6 times; 12—7 times; 14—8 times; 5—9 times; 7—10 times; 4—11 times; 7—12 times; 6—13 times; 4—14 times; 3—15 times; 1—16 times; 3—17 times; 1—18 times; 2—19 times; 2—20 times; 2—21 times; 3—22 times; 1—24 times; 1—25 times; 1—27 times; 1—28 times; 1—29 times; 1—30 times; 1—33 times; 2—38 times; 1—41 times; 1—43 times; 1—52 times; 1—54 times; 1—68 times; 1—78 times; 1—82 times; 1—88 times.

This store filled a total of 4891 prescriptions during the fiscal year May 1, 1930—April 30, 1931, of which 2571 or 52.5 per cent were new and 956 or 19.5 per cent were refills and 509 or 10.5 per cent were narcotics and 855 or 17.5 per cent were liquor prescriptions. The average number of prescriptions filled a day were 13.4. There was a wide seasonal variation, particularly for new and narcotic prescriptions. The Winter months were the best, beginning with December and reaching a peak during February. The period, May to November, ran very even, the number of prescriptions being filled during any of these months numbering only half of the February figure.

The 1020 non-narcotic and the 180 narcotic prescriptions analyzed represented prescriptions written by 253 physicians or an average of 4.75 prescriptions per physician. This was considered a very good distribution, there being only a few instances where any one physician accounted for a large number of the prescriptions analyzed. However, the following instances occur: one physician wrote 105 prescriptions or 8.7% of the total, another 75 prescriptions or 6% of the total, a third 42 or 2.5% of the total and a fourth 39 or 2% of the total. Indicating the wide distribution in prescription writing, it might be said that 49 physicians wrote only two each, and 111 physicians wrote only one each.

Liquid prescriptions constituted approximately 60 per cent of the total number of prescriptions filled, followed by capsules with approximately 20 per cent and tablets 12 per cent. Ointments were fourth with 5 per cent, bulk powders 2½ per cent and charts 1½ per cent, the remainder being divided into suppositories, pills, ampuls, etc.

Liquid prescriptions constituted 45% of the narcotic prescriptions, capsules 40%, while tablets and other forms accounted for the remaining 5%.

This store had an average charge of \$.86 per prescription; non-narcotic prescriptions averaged \$.85 each, while narcotic prescriptions averaged \$.94 each.

Non-narcotic prescriptions containing only official ingredients were priced at an average of \$.75 each, while non-narcotic prescriptions containing a combination of official and proprietary ingredients averaged \$.92 each and non-narcotic prescriptions consisting entirely of proprietary ingredients averaged \$1.00 each. Thus it will be noted that the price of the prescription increases proportionately to the extent that it contains proprietary ingredients.

Proprietary prescriptions form approximately 27% of the 1200 prescriptions analyzed in this store; combination prescriptions represented 18% and official prescriptions represented the remaining 55 per cent.

While 226 of the 1200 prescriptions were dispensed in capsule form, the pharmacist only indicated the size of the empty capsule employed in only 124 instances.

Nine per cent of the 1200 prescriptions analyzed were written in the metric system.

Out of the 1200 prescriptions analyzed, prescriptions with only one ingredient occurred 500 times; those with 2 ingredients 241 times; those with 3, 174 times; with 4, 73 times; with 5, and more ingredients, 32 times. There were no prescriptions with more than 9 ingredients.

The prescriptions were examined for legibility. In this connection 851 were marked fair, 293 good and 56 poor.

No doubt the most valuable part of the prescription study will be the tabulations of the actual drugs prescribed as to kinds, brands and number of times each was prescribed. The result I believe will throw a much needed light on the stock requirements of the present-day prescription departments. Furthermore, we intend to place this data at the service of the National Formulary and the United States Pharmacopœial Revision Committees.

We already have a tabulation of the 200 most widely prescribed drugs in the 1200 prescriptions analyzed and find that after distilled water, codeine sulphate led with a frequency of occurrence of 82, other frequencies in order of their occurrence were acid acetyl salicylic 78 times, phenol 68 times; sodium bicarbonate 54 times; acetphenetidin 52; caffeine citrate 43; elixir phenobarbital 41; elixir lactated pepsin 38 and Neo-Silvol 38.

Forty-six of the 200 most widely prescribed drugs were proprietaries.

We expect that our best source for a wide variety of prescriptions to be analyzed will be the professional prescription store in the Medical Building previously referred to, if for no other reason than that it has been in business approximately thirty years and we will be able to make comparative studies over this period, the results of which should give some very interesting trends.

In conclusion, I would like to say that it is my belief that in spite of the rather small number of prescriptions the average drug store is filling the final results of the survey are going to vindicate the prescription department and show conclusively that for the amount invested the receipts are entirely satisfactory. Preliminary figures for four stores, three of which are doing a small prescription business indicate that annual prescription sales amount to from a minimum of three to as many as six times the value of the investments. The investment, of course, being figured at cost.

I believe that you will be able to draw some very interesting conclusions from the final report of the prescription phase of the National Drug Store Survey. No one will deny the efficacy of facts, and our study of the prescription departments of the drug stores being surveyed will, I believe, place at the disposal of all branches of the drug industry certain data that I trust may prove of practical application.

THE FARADAY CENTENARY.

On September 10th the 100th anniversary of important discoveries in physics and electricity by Michael Faraday and Joseph Henry were commemorated in Schenectady by the American Physical Society at the opening session of its 172nd meeting.

The tributes to Faraday and also Henry, who were connected with the Albany Academy, were delivered in the new auditorium of the General Electric Research Laboratory.

A paper on the work of Faraday, written by Sir. William Bragg, British scientist, was read by Professor John Zeleny. Henry's work was extolled by Professor W. G. Magie of Princeton University.

Papers on various questions of applied physics were read by several scientists and research workers at a subsequent meeting in Union College.

ELEMENT 87 DISCOVERED IN MINERAL SAMARSKITE.

Element 87 has been discovered in a substance known as samarskite, a lustrous velvety black mineral found in Norway, Siberia and some of the southern states of this country. Two million pounds of it contain one pound of Element 87. Discovery of this element by Professor Jacob Papish of Cornell University, leaves only one of the ninety-two elements unidentified, that being No. 85. It is an insoluble solid and cannot be isolated because of its high inflammability; it may have possibilities for use with photo-electric tubes because it is unusually sensitive to light; however, its presence in samarskite, used in the experiments, was in such small proportion that Professor Papish was convinced that it will never be abundant.