Under commencing business comes location of store, necessary capital, selection and arrangement of store fixtures, and equipment of laboratory. Under purchasing should be considered how and when to buy, terms and discounts, the relative advantages of advertised and non-advertised preparations, coöperative buying associations, purchasing job-lots, and purchasing records. In handling stock the "turnover," the care and reception of stock, systematic arrangement, stock records and shortages are to be taken into account. The importance of the first-mentioned topic may be realized from the fact that the rapidity of the turnover has been found to vary directly with the net profits. Under marking goods the cost of selling goods, the policy as to sales, and the prevention of losses and leaks should be studied.

Cleanliness, its importance and how obtained, and other practical problems of store management should receive attention. Among the miscellaneous problems treated in this course should be the relative advantage of making one's own specialties or having them manufactured by others, what pharmaceutical preparations may best be made by the average druggist, insurance, taxation, and telephone. The last three topics suggest large fields in themselves. In fact this subject of store management will take its place as one of the major parts of the year's work.

The above program is suggestive and it will need revision and development as the work progresses. The Massachusetts College of Pharmacy inaugurated such a course in September 1921, and it is hoped that a report of successful progress can be made on it later.

THE HISTORY OF THE PHILADELPHIA COLLEGE OF PHARMACY IN RELATION TO THE DEVELOPMENT OF PHARMACEUTICAL EDUCATION.*

BY JOSEPH W. ENGLAND.

The Philadelphia College of Pharmacy was founded by sixty-eight druggists and apothecaries of the City and Liberties of Philadelphia, mostly members of the Religious Society of Friends, commonly called Quakers, on February 23, 1821, in historic Carpenters' Hall, a building occupied in 1774 by the Provincial Assembly, which recommended a general Congress of all the American colonies, which Congress also met in this Hall, and within it inaugurated those measures which, after the perils of the Revolution, terminated so favorably for civil liberty in America and throughout the world. And so the birthplace of civil liberty became the birthplace of American Pharmaceutical Education.

The founding of the Philadelphia College of Pharmacy was the result of a resolution of the Board of Trustees of the University of Pennsylvania adopted on February 21, 1821, to institute a course of instruction for the students in pharmacy leading to the degree of master of pharmacy, which course, however, was never given, although on April 5, 1821, the University did, indeed, proceed so far as to confer the honorary degree of master of pharmacy upon sixteen apothecaries of Philadelphia, the first grant of a pharmaceutical degree in this country.

* Read before Section on Historical Pharmacy, A. Ph. A., New Orleans meeting, 1921. For discussion see Minutes, December JOUR. A. PH. A., p. 966.

Prior to 1821, "in this new country, with its sparse population and vast territorial extent, its few small but growing cities scattered along the seaboard, the occasion had scarcely arisen to put into practice the obvious educational means fitted to meet these requirements; but now the time had evidently come. Every intelligent druggist and apothecary felt that the instruction which might be suitable for the student preparing himself for the duties of the physician would be only partially fitted for one who was to assume the widely different responsibilities of the drug store and dispensary" ("Historical Memoirs of the Philadelphia College of Pharmacy," Edward Parrish, *American Journal of Pharmacy*, 1869, 9).

Furthermore, the founders of the College realized that their responsibilities were not solely to provide pharmaceutical education, but also to protect the public against the adulteration and misbranding of drugs; thus, at the second meeting of the College (March 13, 1821), a committee appointed at the first meeting reported "that abuses had crept into the drug and apothecary business, instances had occurred of deteriorated drugs being introduced into the shops and valuable remedies in daily use being adulterated and sold of inferior quality, and that such abuses were attributable in part 'to want of proper pharmacological information on the part of some druggists and apothecaries who vend and of physicians who buy,' and it was recommended, with the establishment of the College, that its 'attention be constantly directed to the quality of articles brought into the drug market, subjects relating to the business and its objects be discussed, and information beneficial and instructive to the trade communicated.' "

It is of interest to note that "the first years of the College were marked by great activity. Committees of inspection were appointed to examine drugs introduced into the market, and to expose adulteration and sophistication. Latin labels were printed, carefully adapted to the official standard of nomenclature. Formulas were published for the old English remedies called 'patent medicines,' then very extensively sold, with a view to greater uniformity in their composition and properties; and the absurdly worked wrappers in which these were enveloped, giving false or exaggerated accounts of their virtues, were measurably superseded by more sensible and truthful 'directions.' Meanwhile, a library was being formed, a cabinet of the specimens collected, and the various improvements in chemistry and pharmacy suggested from time to time were investigated and reported upon" (Edward Parrish).

In this way, the College sought to prevent the manufacture and sale of adulterated or misbranded or deleterious drugs and medicines, thereby anticipating, in a sense, the enactment of the Federal Food and Drugs Act of nearly one hundred years later, but the influence of the College was wholly educational and moral, and no adequate protection was given to the public until the enactment of the Federal Food and Drug Act of 1906, one of the most righteous laws ever passed by the United States Congress.

During the first fifty years (1821–71) the instruction of the College was in materia medica, pharmacy and chemistry, and in the last four years of that period, in botany, also; and it was wholly didactic.

In 1846 an epoch-making advance was made, when pharmacy was recognized as a distinct branch by the establishment of the chair of theory and practice of pharmacy, and the chair of pharmaceutical and general chemistry was changed to chem-

istry. In 1867, the chair of materia medica was changed to materia medica and botany, and field work in botany was begun.

During the past fifty years (1871–1921) many additions to the curriculum have been made, such as analytical chemistry, practical or operative pharmacy, pharmaceutical chemistry, commercial pharmacy, pharmaceutical jurisprudence, chemical control in manufacturing pharmacy, scientific research, bacteriology, hygiene, Latin and pharmaceutical arithmetic, as well as special courses in technical chemistry, applied bacteriology, technical microscopy, physiologic assaying, clinical chemistry, advanced pharmacognosy, and perfumery, and post-graduate courses leading to the degrees of bachelor of science in pharmacy, chemistry, pharmacognosy, and bacteriology.

In 1897, the chair of materia medica and botany was divided into materia medica, including physiology, and botany, including pharmacognosy.

In 1886, when the College first occupied its present site, it had three instructors, to-day it has thirty; then 146 students, to-day more than 600; then no women students, to-day 50; then no laboratories, to-day 6; then no post-graduate courses, now four leading to degrees.

In 1920, in order to expand its courses of instruction, the charter was amended and the title changed to the Philadelphia College of Pharmacy and Science.

It is impossible at this time to more than briefly mention the teachers of the past, but during the first twenty-five years those who deserve especial mention are Samuel Jackson, George B. Wood, Joseph Carson and Franklin Bache, all of whom exercised potential influence during this formative period of American pharmacy.

During the next fifty years the list embraced such widely known authorities in pharmacy as Robert Bridges (1842–79); Edward Parrish (1864–72), the author of the first distinctively American textbook on the practice of pharmacy; John Michael Maisch (1866–93) whose constructive work for the upbuilding of pharmaceutical botany, materia medica and plant chemistry will last as long as the name of pharmacy endures; and William Procter, Jr. (1846–66, 1872–74), whose research in pharmacy gave a wonderful impetus to the growth and development of American pharmacy, made it known the world over, and won for himself the name of "The Father of American Pharmacy."

And William Procter, Jr., was succeeded by one who lived in our own time—"the noblest Roman of them all," one who as pharmacist, teacher (1874–1918), educator, author, and executive—especially as the Chairman of the Committee on Revision of the U. S. Pharmacopoeia for two successive decades—was the outstanding figure of American pharmacy in his day, the teacher of teachers, and the genial, warm-hearted, inspiring friend of us all—Joseph Price Remington. "And we ne'er shall look upon his like again."

And then there was one who stood next to Remington, one who was most largely instrumental in making the course of commercial training of the College (established in 1899, and the first of its kind in the country) so successful, who became one of the foremost figures in American industrial pharmacy, and who loved his Alma Mater and never forgot her, even unto death—Frank Gibbs Ryan!

Quizzing was early instituted at the college and was conducted first by the professors themselves, and in the late 70's by quiz-masters approved by the Committee on Instruction. In 1880, quizzes were authorized by the Alumni Association, and this constituted the cornerstone of the present system of quizzing or review; later (1886) these were combined with the College review of quizzes and made compulsory (1895), the College assuming full charge.

In 1821 the conditions of the practice of pharmacy were primitive. As Edward Parrish (*American Journal of Pharmacy*, 1871, 471) stated, in 1871, in his introductory lecture to the fiftieth course of the Philadelphia College of Pharmacy:

"Fifty years ago when the College was established, almost every considerable drug store had something like a laboratory attached, where some of the few chemicals then in use and all the galenical preparations were made, and where nearly all the crude drugs were assorted, garbled and packed. The apprentices then enjoyed a wholesale development of muscle through

wielding the ponderous pestle, handling the sieves and working the screw-press. He learned how to make pills by the wholesale, to prepare great jars of extracts and cerates, to bottle castor oil, Turlington's Balsam and opodeldoc by the gross, and what he lacked in the number of variety of articles he dealt in, was made up by a greater extent of his operations and the completeness with which, in a single establishment, all the then-known processes were practiced. Very many physicians then dispensed their own prescriptions, drawing the supplies from the druggists, but gradually the separate prescription counter was added to the drug stores, and the dispensing stores, as we now call them, became numerous, and the wholesale druggists gradually ceased to supply the public directly."

Our Quaker forbears realized that pharmacy was both an art and a science, and to be a master of the craft, the pharmaceutical student must have practical instruction as well as theoretical, and from the first they required that the candidate for graduation from the College shall have a "practical experience of at least four years with a person or persons engaged in and qualified to conduct the drug business." Thus, vocational training in pharmacy as a prerequisite for graduation was first established in this country.

About the time of the Civil War, a radical change took place in the retail drug business. The manufacturing of drugs and chemicals was taken over by manufacturing houses, more and more, the old apprenticeship custom of legally indenturing youths to learn "the drug and apothecary business" rapidly fell into disuse, and the character of practical experience in the retail drug store changed, becoming less and less adequate, so far as manufacturing was concerned; although the underlying principle of "drug-store experience," with its familiarity with work-a-day technique, continued fundamentally sound. Hence, it became evident that the College should give laboratory instruction, but the means of the College were limited, and it could not see its way clear, at this time, to give such instruction, especially as it was comtemplating the erection of new buildings in the near future.

The biggest asset of any college is its alumni, directly and indirectly—directly in exemplifying its teaching and indirectly by its work for the Alma Mater.

The Alumni Association of the Philadelphia College of Pharmacy was founded in 1864 by Edward C. Jones and Albert E. Ebert, graduates of the class of 1864, and in the year of its organization it began a movement for the raising of funds for the equipment of a chemical and pharmaceutical laboratory; by 1867 the subscriptions had amounted to nearly $5000, and in 1870 it established a laboratory for instruction in practical chemistry and pharmacy in charge of Prof. John M. Maisch, the first of its kind in America. In 1872 the laboratory was turned over to the College by the Alumni Association. In 1876 its two divisions of work were partially segregated, Prof. Remington giving a course in pharmaceutical manipulations, and in 1878 he assumed full charge of the pharmaceutical laboratory (or laboratory of operative pharmacy), while Prof. Maisch confined his instruction to the chemical laboratory. In 1903 an optional course in dispensing was inaugurated, and the following year it became part of the regular course.

In the chemical laboratory, Prof. Maisch was succeeded as director by Frederick Belding Power (1881–83), whose famous research work later in phytochemistry in the Wellcome Research Laboratory of London is known to you all, and he by Henry Trimble (1883–1898), whose research work on the tannins is classic.

The microscopical laboratory was originated, also, by the Alumni Association, commencing with 1882–83, the Association controlling the instruction in this department until 1894, when the College assumed charge of it as the botanical and microscopical laboratory.

In 1899 optional laboratory courses were established in bacteriology, the study of powdered foods and drugs, fungi and fungous diseases, morphology and physiology, and systematic botany, and in 1913 bacteriological laboratory work became a part of the regular course.

With the enactment of the Federal Food and Drugs Act of 1906, it became apparent that skilled food and drug technicians would be necessary to ensure the proper enforcement of the law, and in 1907 the College secured, largely through the personal solicitations of the late Mahlon N. Kline and Joseph P. Remington, contributions of some thousands of dollars, with which it was enabled to erect a food and drug laboratory building and inaugurate a course in food and drug analysis.

Equal in importance to pharmaceutical education is pharmaceutical research, because pharmaceutical practice is, in effect, applied education, and education is applied research; and upon the bases of research, education and practice rest the science and art of pharmacy.

The founders of the College recognized the vital importance of systematized research and in 1825–29 published irregularly a journal devoted to research under the name of the *Journal of the Philadelphia College of Pharmacy*. In 1829, the journal was issued at regular stated periods, and in 1835, the title changed to the *American Journal of Pharmacy*. It is not only the earliest periodical of its kind in the world, but it is recognized, at home and abroad, as the leading scientific pharmaceutical periodical of this country.

During the past ninety odd years, the journal has published 50,000 reading pages, a large part of which has been research work in pharmacy, chemistry, pharmacognosy and science by the faculty, members and contributors of the College. Thus: John Farr, of Farr ad Kunzi (later Powers and Weightman), in a paper read before the Philadelphia College of Pharmacy, of which he was a member, at a meeting held December 27, 1825, on the subject of "Extract of Quinine" (Proceedings of the Philadelphia College of Pharmacy, later the *American Journal of Pharmacy*, Vol. 1, No. 2, 43), made the following statement:—"In the summer and autumn of 1823, a season peculiarly memorable to Philadelphians by reason of the alarming prevalence of intermittent and other fevers, sulphate of quinine was first successfully prepared here;" three years later its discovery by Pelletier and Caventou; and it should be stated, also, that Zeitler and Rosengarten likewise made quinine sulphate in 1823, "their first sale being in December of that year," and it may be added that "morphine sulphate and morphine acetate were first manufactured by George D. Rosengarten in 1832, and the mercurials and strychnine sulphate in 1834" ("Rosengarten and Sons," by William McIntyre, *American Journal of Pharmacy*, 1904, 303). All of which activities were doubtless inspired by the spirit of original research developed by the College. And William Procter's discovery of the properties of the salicylates (1842) led to the manufacture of synthetic oil of wintergreen and the salicylates. Thomas J. Husband first developed (1837) the manufacture of heavy magnesia in this country. Robert Shoemaker first made (1848) glycerin commercially. Charles Shivers first developed the manufacture of adhesive plaster, making enormous quantities for the Government during the Civil War. William R. Warner first developed (1857) the manufacture of sugar-coated pills. Alfred Mellor and Henry N. Rittenhouse first de-

veloped the manufacture of licorice extract. And C. Lewis Diehl and William Procter, Jr., made the process of percolation commercially practicable.

The most important discovery of the 20th century—as important as that of morphine, strychnine and quinine one hundred years ago—was that of diphtheria antitoxin by Behring in collaboration with Kitasato and Wernicke in 1890 and 1892. This discovery reduced the mortality of diphtheria from 40 percent to less than 10 percent and saved millions of lives. Tetanus antitoxin was discovered by Behring and Kitasato in 1892. During the World War its value as a life-saver was amply demonstrated. Ten percent of the wounded on the battle fields of France were attacked by the tetanus bacillus and ninety percent of these died of lockjaw. The call came for tetanus antitoxin and millions of doses were supplied to the armies of the allies, resulting in the control of the deadly infection. These discoveries were speedily followed by others of equal value as life-savers. Typhoid fever, which hitherto had killed more soldiers than the bullets of the enemy, was banished from the armies by anti-typhoid vaccination.

These wonderful discoveries have largely been made available by graduates of the Philadelphia College of Pharmacy as the H. K. Mulford Company, the earliest and largest producers of biologic products in this country, promptly and successfully met, by means of an immense reserve stock, the call of the allied armies for such products during the World War.

The library of the College of 20,000 volumes, constituting probably the largest and most valuable pharmaceutical library in the United States, has been found to be of incalculable service in research work; likewise its museum and herbarium, with its many thousands of medicinal plants, its rare and typical exhibits of crude drugs, its raw materials, and its manufactured drugs from all parts of the world.

In the literature of pharmacy and allied science, the College has always been most actively represented, its faculty having issued nearly 200 volumes. Thus, the "U. S. Dispensatory" was founded in 1833 by George B. Wood and Franklin Bache, both of the faculty; John M. Maisch (with Alfred Stille, M.D.) founded the "National Standard Dispensatory" in 1879; Robert Bridges was the American editor of Fownes's "Chemistry" (1845–78), and of Graham's "Elements of Chemistry" (1852); William Procter, Jr., was the American editor of Mohr and Redwood's "Pharmacy" (1849); Edward Parrish wrote his first "Pharmacy" in 1855; Joseph P. Remington's textbook on "Pharmacy" has been the standard textbook on pharmacy since 1885 in this country and many foreign lands; John M. Maisch published in 1881 the first textbook on "Materia Medica" in this country; Henry Kraemer wrote "Applied and Economic Botany," and "Pharmacognosy" (1897–1917); Henry Trimble published his "Tannins;" Frank X. Moerk issued his "Qualitative Chemical Analysis;" Samuel P. Sadtler (with Virgil Coblentz) published his "Pharmaceutical and Medical Chemistry," and his own "Industrial Chemistry;" Heber W. Youngken issued his "Pharmaceutical Botany, and Pharmacognosy;" John W. Roddy issued his "Medical Bacteriology," and Paul S. Pittenger published his "Biochemic Drug Assay Methods;" Julius W. Sturmer, "Pharmaceutical Latin" and Pharmaceutical Arithmetic." And there were many formularies and other books published that are not now in general use.

Prior to the U. S. Pharmacopoeial Convention in 1850, pharmacists had no active part in the revision of the U. S. Pharmacopoeia, the work being done by medical men. But at the 1850 convention the Philadelphia College of Pharmacy presented for consideration "a complete revised copy of the Pharmacopoeia elaborated with ability and great industry, and the Committee accepted, after deliberate examination, nearly all the suggestions" (U. S. P. IX, X); and thus was paved the way, logically, for the representation of pharmacists in all subsequent revisions, and in all of these the College has been most ably represented. Twelve of the thirty-three present pharmaceutical members of the Committee of Revision are P. C. P. men, and the last three Revision-Committee-Chairmen—Remington, LaWall and Cook—have been (or are) members of the faculty of the College.

The American Pharmaceutical Association, which stands for the highest ideals of pharmaceutical practice and is the backbone of professional and scientific pharmacy in this country, was organized in the Philadelphia College of Pharmacy in 1852, and from the time of its organization, the faculty members and graduates of the College have been most active in its work, occupying many official positions.

Such, in brief, are some of the high-lights in the history of the Philadelphia College of Pharmacy and these indicate that the College has exercised, during the past one hundred years, a potential influence in developing pharmaceutical education, intimating many of its most forward steps.

The past is past. It is more—it is history. But the old College cannot rest upon its laurels; it must go forward or backward. Its problems, and these are many, are the problems of every other school of pharmacy in the land. And so with no feeling of unfriendly rivalry towards any other school, but with the warmest well-wishes for all, it is going to go forward and do all within its power to justify the traditions of its founders in its service for American pharmaceutical education, because it recognizes that the interest of one school is, or should be, the interest of all, and that all should work together, not for individual aggrandizement, but in all sincerity for the good of pharmaceutical education as a whole.

In the future development of the schools of pharmacy of this country, it seems to me that five things, chiefly, are essential: (1) Better education, (2) better legislation, (3) better practice, (4) better relations with the medical profession, and (5) better research work.

We must have better education, that is, higher entrance requirements, better facilities for instruction and better courses. Beginning with July 1, 1923, all schools should require high school graduation, or its equivalent, for entrance and should work for better facilities and more advanced instruction.

We must have better legislation, especially prerequisite legislation, and this need is vital, not only for the good of American pharmacy, but for the better service of the American people. To-day, less than one-half of the 48 states of the Union have prerequisite laws, and the public will not be properly served until every state of the Union has such a law; and we must have universal reciprocity between State Boards of Pharmacy, or national licensure; and we must have simpler and more efficient pharmacy laws by state and nation.

We must have better practice along professional or technical lines that will be of direct value to the medical profession in the diagnosis and treatment of

disease; there must be a sharper differentiation by the pharmacist, in his daily work, between legitimate commercial pharmacy and illegitimate, or real pharmacy will cease to be and it may be that we will have, in this country, in the future, two kinds of stores—pharmacies and drug stores—and the former for professional service and legitimate commercialism, and the latter crassly commercial.

We must have better relations with the medical profession by deserving it—by perfecting our individual abilities and directing our work primarily along professional and scientific lines that will appeal to the medical profession and win their sympathetic support. In the past we have not had this. Let us hope that the medical profession will come to realize the potential possibilities of pharmacy and allied sciences acting in coöperation with therapeutics.

Pharmacy is the study of the reaction of drugs *without* the human body, and therapeutics is the study of the reaction of drugs *within* the body, and the one cannot properly function without the other. In a word, pharmacy is the physico-chemistry of drugs, and therapeutics is the biochemistry; and practically, pharmacy is as much a part of medicine as therapeutics or any other medical branch.

We must have better research work, because research is the life-blood of education and practice. As Charles H. LaWall writes me—and what he recommends applies not only to the Philadelphia College of Pharmacy, but to all schools of pharmacy:

> "The future development of pharmacy is largely dependent upon the stimulation of research, especially its inculcation in the student-body. The work in the past has been of the highest character, but it has been done unsystematically and was largely a matter of chance that it was done at all. Men like Maisch, Procter, Remington, Sadtler, Kraemer and others have simply bubbled over with initiative, and their efforts have enriched pharmacy and made it better. To-day, however, the output is limited, because every member of the faculty is driven fullspeed in taking care of his teaching and accessory work. To overcome such a handicap, the teachers should have more assistants for instructional work. The progress of any department of the College could then be measured not only by its instructional results, but also by the quality and quantity of original work it turns out, and the College would have a standing among other scientific schools that instruction alone could not give. Furthermore, students, graduates, members of the College and others, would be inspired to follow the example of the faculty, and the field of research would be developed and coördinated."

And the field of research is practically unlimited. As John Uri Lloyd, a master in pharmacy of the Philadelphia College of Pharmacy (1897), and one whose research work in pharmacy for the past fifty years stands out like a beacon light at home and abroad, writes me: "In my opinion, the field of research is as yet scarcely invaded. Whoever enters it should, with each subject as a foundation, have his feet on the work others have accomplished, then with open mind raise his eyes to the blue sky above. He should start with a hypothesis gained from a study or experience with related products, and yet expect to fail in whatever thought had speculatively advanced. Disappointment brings then no pain. He should be so bold as to question orthodox theoretical rules and formulas, and in the face of "authority" create images and plans of procedure of his own. And yet he should be so timid as to shrink from personal criticism of others, realizing that his own self will rise before him as perhaps the one most subject to criticism under the backward glance. If concerned in the exactions of science, he should expect resistance from those whose idols he touches with even the kindliest intent. If conscious of the correctness of his views he should make no retort; *time*

will care for *fact*. If he has indiscreetly voiced false theories based on fallacious judgment, he should thank the man of the present for service rendered in his disillusionment, resting assured that *time* would later have served the same purpose. If given a moderate period of life the backward glance will surely show a pathway littered with his own broken vases, shattered into fragments by himself. The great charm of research may be defined as the construction of new edifices out of those demolished, and in plant-research, the defining and describing of natural textures and plant structures. In this the doors to be opened by the systematically trained scientists of the near future will surely make the life wonderings of empiricists, with whom this writer is to be classed, pioneer offerings serviceable perhaps mainly as an inspiration to those who follow."

PROCEEDINGS OF THE LOCAL BRANCHES

"All papers presented to the Association and its branches shall become the property of the Association, with the understanding that they are not to be published in any other publication than those of the Association, except by consent of the Committee on Publication."—By-Laws, Chapter X, Art. III.

Reports of the meetings of the Local Branches should be mailed to the Editor on the day following the meeting, if possible. Minutes should be typewritten, with wide spaces between the lines. Care should be taken to give proper names correctly, and manuscript should be signed by the reporter. To maintain its activity and representation each branch should see that at least three of its meetings during the year are reported in the JOURNAL.

CHICAGO.

The 124th meeting of the Chicago Branch of the American Pharmaceutical Association was held Tuesday evening February 21 at the University of Illinois School of Pharmacy Bldg., with President C. M. Snow in the chair.

The topic of the evening was "The Drug Store Laboratory."

Prof. E. N. Gathercoal introduced the discussion with an illustrated talk presenting the fact that purely ethical and highly professional pharmacy was still extensively represented in many larger and smaller cities of our country. This representation is especially noted in the large number of prescription drug stores which are appearing not only in the very large cities but in a great many of the smaller cities; in the largely increasing number of splendidly equipped and stocked hospital pharmacies and, also, by the development in connection with drug stores of biological, clinical and chemical laboratories, and yet further by the prominent place attained by pharmacists as analysts, city chemists, bacteriologists and manufacturing pharmacists.

Pictures were shown of the laboratories and stores of Hynson, Westcott & Dunning, of Baltimore, Md.; John Coleman of Wheeling, W. Va.; Henry Kraemer of Mt. Clemens, Mich.; The Prescription Shop, Joliet, Ill.; Fred Skeyhans, Rockford, Ill.; E. von Hermann, Chicago; Leonard Seltzer, Detroit, Mich.; and of the Presbyterian Hospital drug room (Wm. Gray), Chicago.

Emphasis was placed by the speaker on the fact that it was possible for thoroughly equipped young people in pharmacy to uphold the ethics and profession of pharmacy in their community and yet provide for themselves a good livelihood and a profitable business. It is true, because of the great diversity of pharmaceutical interests and the constantly increasing specialization in pharmacy, that there are many avenues open to the young men and women in pharmacy. Those who have a highly commercial instinct will seek out the more commercial side of pharmacy but those who have a more highly developed scientific side have equal opportunity to make financial success in the professional side of pharmacy.

In addition to the pictures, which illustrated well-equipped prescription stores and the proper equipment of the laboratory, an exhibit laboratory apparatus was shown. This apparatus included such items as oven sterilizers, Arnold sterilizers, pressure sterilizer, incubator, centrifuges, and modern microscopic appliances in operation.

This introductory talk was followed by an excellent, practical demonstration by G.