

mined by the material that is put into it, and that material is represented by the men who are entering upon the profession to-day.

Are these men, after receiving intensive training in the sciences of Chemistry, Biology, Pharmacognosy, etc., are they, after three or four years of university training, going to be satisfied to go back to the so-called "modern" drug store to sell chocolate bars and alarm clocks? I think not.

I believe, sir, that we are soon to reach a parting of the ways. I believe that the Professional Pharmacy *must* survive—the commercial *may*.

We see signs in the horizon now. We are preparing ourselves now for the advent of "State Health Insurance." It is past due. I can visualize the time when the whole practice of both medicine and pharmacy will be under state control, just as our public school educational system is to-day.

When that day comes, we must be able to prove that Pharmacy is an ethical institution, and that we are the logical ones to be entrusted with the business of Pharmacy. Having in mind the fact that physicians in all the provinces and states may legally dispense, is it very remote to anticipate them attempting to take over the business of dispensing?

I do not for a moment believe that the outstanding members of the medical profession would wish this—but we should be prepared to establish the fact that ours is the profession, fitted by education and training, to take over the responsibilities of these duties.

I cannot visualize (under State control) the dispensing of medicines being handed over to stores cluttered up with 10 cent store merchandise, where price appeal is their only asset. I cannot conceive (under such control) the practise of Pharmacy being entrusted to any other than ethical and educated pharmacists.

Let us pay more attention to the educational aspects of our profession. Let us raise the standard to a still higher plane, not for the sake of keeping down the number of entrants, but to make it more selective and cultural. Let us put into this melting-pot young men of unquestioned character and ambition, make it necessary for them to acquire advanced, scientific training with respect to all branches of our profession, and you may rest assured with me that out of this crucible will evolve the type of pharmacist that will faithfully and truly maintain the best traditions of the noble art of Pharmacy.

PHARMACEUTICAL RESEARCH AND THE RESEARCH CONFERENCE.*

BY H. V. ARNY, PH.D.

It is just ten years since the National Conference on Pharmaceutical Research was organized at Cleveland, Ohio, and it is therefore appropriate that the founder of the Conference should speak at this time on "Ten Years of the Research Conference."

While this is the title assigned to me on the official program, with my full approval, I take the privilege of broadening my subject by using the title printed above. While the recital of what has occurred in this organization during the past ten years is of much interest to those present at this meeting, of far greater importance is the endeavor to let a wider audience know the debt that the world owes to pharmaceutical research.

This brings me to the query: "What is pharmaceutical research?" My answer is a broad one—research in all of its phases devoted to study of healing agents. Pharmaceutical research in this sense covers the ages since man began to walk the earth, as a thinking being. Its research workers include the priests of the Egyptian temples of the Eighteenth Dynasty, investigators whose findings have come down to us in medical papyri of B.C. 1700 and B.C. 1552; Greek physicians such as Dioscorides and Galen (First and Second Centuries, A.D.), the Roman medical writers such as Celsus (First Century, A.D.), the Persians or Arabians, such as Rhazes and Avicenna (Ninth and Tenth Centuries, A.D.), medieval herbalists such as St. Hildegard (1098–1179); the Jew, Maimonides (1135–1204), that medical fire-brand, Paracelsus (1493–1541) and lastly the pharmacopœia makers headed by Valerius Cordus (1515–1544). By the time of Cordus pharmacy as we now know it had become a well-established branch of medical practice and while the pharmacists from 1140 to the Eighteenth Century were interested chiefly in preparing

* Read at the 1932 meeting of the National Conference on Pharmaceutical Research.

medicines on physicians' orders, there were, in every generation, from the establishment of the art of printing (1440), enlightened apothecaries such as Brunschwig (born 1430), Brunfels (1488-1534), Quercetanus (1521-1609), Ryff (1544-1573) and Minderer (died 1621) who transmitted their knowledge to their colleagues by means of books. Mention must be made of the alchemists, the fore-shadowers of modern chemistry, who have questionable fame as transmuters of baser metals into gold and who frequently served more useful purposes as physicians and as pharmacists. A significant passage relative to the mingling of alchemy and pharmacy is found in Burton's "Anatomy of Melancholy" (1621) where the author, outlining his ideas as to the perfect commonwealth, includes among the population of the favored community "colleges of druggers—alchemists and physicians." As to the alchemists, he specifies, "not to make gold but for matters of physick."

By the beginning of the Eighteenth Century the pharmaceutical practitioner had become a very important factor in the medical world and pharmaceutical research in its narrower sense began its career of usefulness. Pharmacy is proud to acclaim as its very own such men as Scheele (1742-1826), the Swedish apothecary who discovered chlorine and a host of organic compounds such as the fruit acids; Sertürner (1783-1841), Pelletier (1788-1842) and Caventou (1795-1877), the early investigators of alkaloids; Bourquelot (1851-1921), pioneer in glucosidal syntheses; Tschirch (1856-), the great pharmacognosist and phytochemist, a world authority on anthraquinone drugs and on resins.

American Pharmacy points with pride to such men as the pharmacopœia makers, Procter, Rice, Remington and Diehl; to those manufacturing pharmacists who dared to be scientific, Squibb and Lloyd; to the phytochemists, Power and Kremers; and to the pharmacognosists, Maisch, Kraemer and Rusby; to say nothing of the earnest group of highly trained and brilliant research workers who represent our National Conference on Pharmaceutical Research.

This brings us to the causes actuating the creation in 1922 of our Research Conference.

We have said above that scientific research in pharmacy began with the discoveries made by Scheele during the period dating from 1765. Too much stress cannot be laid upon the fact that Scheele was a pharmacist from that day in 1756 when he became the apprentice of Apothecary Bauch of Gothenberg to the day in 1786 when he died at his apothecary shop in Köping. The chemical profession claims Scheele as one of its own, since his discoveries are among the most important in chemical history, but it is to be borne in mind that Scheele lived in the days when chemistry was an infant in swaddling clothes, that chemical laboratories as such did not exist in universities until Stromeyer, in 1805, established his famous laboratory at the University of Göttingen. The great Liebig was himself a pharmaceutical apprentice and on more than one occasion gave credit to medicine and to pharmacy as the arts which had prepared the soil from which the science of chemistry had germinated and flourished.

In similar fashion, the modern science of botany began with the herbalists, those ancient physicians and pharmacists who collected medicinal plants; hence, we pharmacists may say without fear of contradiction that our ancient craft may be considered as the godmother of those two sciences, Chemistry and Botany, which have contributed so much to the healing of nations.

In the period 1900 to 1920, thoughtful pharmacists noted a decline of interest in research in the body pharmaceutic and during the same period the vast increase in research along chemical and botanical lines was self-evident. Pharmaceutical research in the narrow sense was being faithfully conducted but our sister sciences not only developed research to a marked degree but also had no hesitation in giving their research achievements wide publicity. Some of the more enthusiastic publicists actually took unto themselves credit for work performed by pharmacists. Thus apothecary Scheele, became Scheele, the chemist, *pharmacien* Bourquelot became Bourquelot, the biologist, our own John Uri Lloyd became Lloyd, the physical chemist. The most outrageous perversion that we have noted is the placard describing the beautiful painting "Medicine" in the entrance hall of the magnificent Education Building in Albany, N. Y. This painting represents an exquisite Greek landscape in the foreground of which is found the Greek physician, carrying on a distillation with the aid of his pharmaceutical disciple. This disciple, according to the descriptive placard, is "The Chemist."

Pondering over these diversions of pharmaceutical achievements into other lines; noting lack of recognition of scientific pharmacy by various branches of the Federal government; regretting the difficulty in creating pharmaceutical sub-committees in the National Research Council,

the writer of these lines in his capacity of chairman of the then newly created committee on research of the AMERICAN PHARMACEUTICAL ASSOCIATION inaugurated a quiet movement to create an organization of research workers along pharmaceutical lines. The organization meeting was held in Cleveland on August 12, 1922, at which were present delegates from five national pharmaceutical associations, from the U. S. P. Revision Committee and from the Bureau of Chemistry of the U. S. Department of Agriculture; a group of some twenty persons interested in pharmaceutical research. As an indication of the development of the Research Conference from this simple beginning we need only to glance around this meeting room and to cite from the printed page the fact that, at the 1931 meeting of the Research Conference, held at Miami, Florida, there were delegates from ten national pharmaceutical associations, from both the U. S. P. and the N. F. Revision Committees and from two bureaus of the Federal government; a group of research workers numbering somewhere around one hundred people.

And now, as to work accomplished by the Research Conference.

The three purposes of the Conference as organized in 1922 were (a) a review of accomplishments in the field of pharmaceutical research, (b) annual compilation of data relating to pharmaceutical research workers and to the work being carried out by them, (c) stimulation and encouragement of research relating to pharmacy.

How far these purposes have been carried out, the following accomplishments of the Research Conference may be cited.

1. Creation of 14 committees, 10 of which are directly charged with the task of reviewing the accomplishments in the field of pharmaceutical research.
2. Annual publication of a Census of Pharmaceutical Research.
3. Creation and publishing through the efforts of Secretary Krantz of a book on the research achievements of pharmacy.
4. Creation, through the efforts of Chairman Gathercoal, of an Inter-Society Color Council.
5. Creation of a Research Fund, the first grant from which will be made at this meeting.
6. Creation of sub-committees of pharmacy within the divisions of chemistry, botany and medical sciences of the National Research Council.

As to these six lines of achievement, a few personal comments may be in order.

Our committees are functioning finely. If there were no other achievement to record, the work of Chairman Gathercoal in organizing a color conference at Washington in 1930 followed by the development from that initial gathering, of the Inter-Society Color Council, would more than justify the existence of our own Research Conference. At this meeting we will hear of the permanent organization of the Inter-Society Color Council held in New York last December at which time our own Professor Gathercoal was elected chairman.

The Census of Research can be made to speak for itself by merely saying that while the first census (1925) recorded 239 persons engaged in pharmaceutical research, the seventh census (1931) revealed no less than 503 persons interested in this field of endeavor. These 503 research workers were grouped into the several classes; retail pharmacists, hospital pharmacists, whole-sale druggists, pharmacists in medical school work, governmental scientists, practicing chemists, chemical research institution workers, non-pharmaceutical teachers and their students (chemists, botanists and pharmacologists), manufacturing pharmacists and finally pharmaceutical teachers and their students. The last two groups (188 and 219, respectively) represent about 80 per cent of the total number of workers listed in the Census.

The value of this Census is not easy to express in mere figures but the present writer's opinions based on his work as compiler of the seven annual instalments from 1925 to 1931, respectively, may be of interest.

1. The Census has been an important stimulant of pharmaceutical research. Schools formerly ignoring the Census are now anxious to show evidence of research under way or about to be published.
2. The Census is a permanent and continuous answer to those scientists in other lines who have questioned whether there was such a thing as pharmaceutical research.
3. The Census has promoted good feeling between pharmaceutical research workers and their brethren in other fields of science.

Comparison has been made above of pharmaceutical research in its broadest and in its

narrowest senses. In the broadest sense, pharmaceutical research would include the scientific efforts of every person interested in all types of substances used in healing disease.

Under this definition, there would be included in the Census all research workers on pharmacology, therapeutics, bacteriology (as relates to pathogenic organisms), botany of medicinal plants, pharmacognosy, medicinal organic chemicals, pharmaceutical inorganic chemicals, biology as applied to vitamins and other food accessories and physiology as applied to endocrines; a truly formidable list. It is of interest to note that distinguished organic chemists and pharmacologists have been pleased to enroll the names of themselves and of their students in our Census; no less than 50 of the 503 recorded in 1931 being included in these groups.

In the narrow sense, the term, pharmaceutical research, should be limited to those persons of pharmaceutical training or possessing pharmaceutical allegiances. In the Census of 1931, 422 of the 503 persons enrolled belong to the narrow pharmaceutical group.

As to the *book on research achievements* of pharmacy, that admirable volume "Fighting Disease with Drugs" and also as to *Research Fund*, these important undertakings will be reported upon by the appropriate committees. I will merely state that "Fighting Disease with Drugs" is a book that deserves as wide-spread circulation as the popular publications of the American Chemical Society.

As to the pharmaceutical committees within the *National Research Council*, there is an important lesson to be learned from the bare statement that of the three committees cited above, one was disintegrated through dissensions, one has been quiescent since its organization, while one (that of pharmacognosy within the division of botany) has maintained a useful existence during the past ten years.

Our experience with these three committees confirms the oft-expressed opinion that the usefulness of a committee depends upon the members thereof.

It is a matter for congratulation that the Research Conference was able to arrange this triple connection with the Research Council; it is a matter of regret that two of the links have become severed; it is a source of joy that our good friends, the pharmacognosists of this Research Conference, have been able to reflect credit upon pharmacy within the National Research Council.

And now a few words in conclusion.

As I look back over the ten years of the National Conference on Pharmaceutical Research, I am proud to have been the agent that brought our Conference into being. I am delighted to see how finely the present administration is carrying on the work inaugurated in 1922. The earnest workers of this Research Conference have caused American Pharmacy to become research-conscious. They have inspired the rank and file of pharmaceutical scientists to realize their pharmaceutical heritage; to devote more time to research; to encourage the younger men to dare to find time for research. They have made a beginning toward securing worth-while grants for pharmaceutical research from those of our calling favored with wealth; they have convinced their confrères in other sciences, that pharmaceutical research is not limited to the achievements of past centuries but is a living force of to-day making the whole world the better because of the existence of faithful and self-denying souls ready to search out the secrets of medicines; ready to apply the newer knowledge in the fight against disease.

COLLEGE OF PHARMACY, COLUMBIA UNIVERSITY, August, 1932.

THE INTERNATIONAL PHARMACEUTICAL FEDERATION.*

BY T. POTJEWIJD.

At the General Assembly of the Dutch Pharmaceutical Association, held in 1908 at Alkmaar, a proposition of the department Limburg came up for discussion which requested that the Board of the Dutch Pharmaceutical Association should confer with the professional associations of Pharmacy in Europe, with the purpose of organizing an international association of Pharmacy. The Board of Directors thought it impossible to give a favorable preliminary decision as, in the opinion of many, these preparatory activities would incur large expenses. It was the Department of Amsterdam which, through Professor P. Van der Wielen, of Amsterdam, presented an amendment that could be accepted as a practical solution of this problem.

* A communication to the JOURNAL A. PH. A.