THE DEPARTMENT OF THE AMERICAN ASSOCIATION OF COLLEGES OF PHARMACY

WHAT SHOULD A COURSE IN PHARMACY CONSIST OF AND HOW CAN IT BE VITALIZED?

BY EDWARD KREMERS.

As Chairman of the Section on Materia Medica, Botany, Physiology and Pharmacology, Dr. Lyman wrote to me under date of July 27th: "I know it is out of your field in a certain way and yet it is not, but I want you to write a paper on what a course in pharmacognosy should consist of and how can it be vitalized."

Dr. Lyman realizes that it would require a certain amount of rashness to accept the invitation, yet I dare say he was unaware that, at my very first meeting with my pharmaceutical colleagues in the White Mountains in 1892, I spoke uninvited on this subject and succeeded in that in which I wanted to succeed, *viz.*, in raising a lively discussion. Far was it from me as a novice in the art of teaching to tell my older colleagues how they were to teach their subject. Farther be it from me to-day, as a veteran in the field, to tell my younger associates how they are to teach pharmacognosy or anything elase. To-day, even more than thirty-four years ago, I am entitled to my ideas and if, as Dr. Lyman seems to think, you are willing to listen to me, I shall be glad to express them.

My first thesis is this: The cramming of a host of details is educationally unsound. Pharmacognosy is not the only science to which this statement applies, yet pharmacognosy teachers have been particularly guilty in this direction. In order to avoid ambiguity permit me to be personal and to select as an illustration the text of the late Professor Maisch who was regarded as a great teacher of so-called pharmaceutical Materia Medica. Having been one of his students, I can speak, not only from his text, but from his lectures as well. As one of his students I greatly admired him, yet while sitting at his feet, I learned to regard his method as educationally wrong. To the former macroscopic descriptions of drugs, he had added what was referred to as the "Lupenbild," supposedly a scientific advance, at that time in the teaching of what we now call pharmacognosy. One of his successors added to the lense picture, if you will permit a literal translation of the German idiom, the microscopic picture, not only of sections but of powders. In his enthusiasm, our lamented colleague went so far at one of the meetings of the Scientific Section of the A. PH. A., as to claim that he could teach his students every microscopic detail of a drug powder so that they could not fail to recognize it in their sleep. If I admired John M. Maisch as a teacher, I equally admired Henry Kraemer as a colleague, but *cui bono?* From the scientific point of view no good results can be expected from committing to memory the description of drugs, whether macroscopic or microscopic. From the practical point of view much valuable time is lost, and, as the citizen of Dollarica is prone to say: "Time is money." Whenever I think of the good old times of studying vegetable drugs, I am reminded of what the late Dr. Frederick Hoffmann told me about his preparation for the State Board Examination as "Apotheker" in Berlin. Instead of going to the drug cabinet to acquaint himself with the appearance of drugs so

that he might be successful in the identification test, he remained in his den and looked at the colored pictures in a pharmacognostical atlas. What is more, he succeeded in passing the examination. The idea that the successful candiate in pharmacy should be able to rattle off the scientific and other names associated with every vegetable drug of the U. S. P. and N. F.; that he should be able to describe it macroscopically or microscopically, or both; and that he should be able to identify it by sight, supplemented by taste and odor, represents the Kindergarten stage of teaching pharmacognosy.

My second thesis follows: Pharmacognosy should be taught as a science, not as a drill in memorizing. As a prep I had to learn the rules of Greek accent, yet before the year had expired, I had forgotten the rules but could place the correct accent in connection with a reasonable number of words. In like manner, there was a time—but it did not last long—when I could rattle off the German prepositions grouped according to the cases which they govern. I can use German prepositions to-day, and use them correctly after fifty years, but the rules, as already intimated, stayed with me for a short time only. Again, I memorized French irregular verbs at a time when I should have done something more worth while, only to forget them even faster than the rules of other languages. As a student in general chemistry, I memorized Avogadro's law and many other laws. To-day it might be difficult for me to pass a preliminary examination for the doctorate or even one in freshman chemistry.

For college examinations and for the state board examination I committed to memory a lot of stuff that was sheer waste of time. However, when I learned rules of Greek accent, I quickly forgot them after I had become accustomed to apply them automatically. Having long forgotten the wording of physical and chemical laws, I could well afford to be careless in this respect, because I had learned to think and work in accordance with these laws. When I forgot the host of names, memorized for examination, also the descriptions of drugs, I had nothing left but a memory trained a trifle better for this drill. However, I might to advantage have trained my memory fully as well by applying it to subjects more worth while mentally.

The study of chemistry has, for decades, consisted of something more than the memorizing of the color of green vitriol, blue vitriol and white vitriol. It has ceased to be a loading down of the memory with atomic weights. No longer do you find in our lecture rooms the chart of elements, according to Berzelius, from the most positive to the most negative, so that the student may absorb this information while waiting for the lecturer. No longer—at least I hope my statement may not be contradicted—do we come across the examination question: "A kilogram of a liquid weighs 1.250 grams. What is this liquid?" The teacher of chemistry of to-day teaches something that is more worth while, even though, when a member of an examining committee for the doctorate, he still asks a host of memory questions that are not worth the time wasted on them. The teacher of mineralogy is no longer content with reading from manuscript notes the descriptions of hundreds of minerals which, later on, he expects his students to identify by sight. The botanist has even gone to the other extreme. Many a botanist no longer knows plants.

But, you will ask, how is the teacher of pharmacognosy to teach his subject?

This question is not readily answered. Moreover, it largely depends on the scientific preparation and inclination of the teacher. The pharmacognosist whose preparation has been largely botanical will naturally make most of his botany. If his preparation has been largely chemical he will make most of his chemistry, etc. But neither teacher should be satisfied with individual botanical description, nor with the committing to memory of chemical constituents. To be able to rattle off that cinchona bark contains quinine, quinidine, cinchonine and cinchonidine may be just as worthless as to be able to give the scientific names of the species or the geographic names of the commercial varieties.

If the chemistry student should be taught to think chemically, the student of pharmacognosy should be initiated into the spirit of pharmacognosy. How may this be brought about?

In order that the student may be initiated into the spirit of vegetable pharmacognosy, he should first of all know something about medicinal plants and the drugs which they yield. When as a boy I became interested in minerals, I did not purchase a dollar collection of one hundred minerals from a dealer in minerals or any other collection. Scarce as were minerals about my home, I tramped out to the cement quarry for crystals of calcite. The glacial moraines along the shore of Lake Michigan yielded pyrites. Still others I got by exchange and only later did I buy the great dollar collection already alluded to. When apprenticed to Louis Lotz in the early eighties I made up a collection of drugs from the store. However, from the very beginning I was more interested in going out in spring to find hepatica and blood root and to collect, not only an herbarium specimen but to prepare the drug myself. Then I wrote the labels for both herbarium specimen and drug. What little memorizing I did was done while occupied with the weekly cleaning of the shelf bottles, for each wide mouth shelf bottle, as well as each drawer, had not only the regular label, but a separate label on which were recorded the botanical source, family name and other information which we absorbed while engaged in an otherwise menial task. As I left home, I availed myself of every opportunity to enlarge my collection and thus to enrich my knowledge. Of memorizing I was not guilty until I went to college and when I was forced to prepare for the State board examination.

Of one thing I am certain, *viz.*, that I imbibed none of the spirit of pharmacognosy by committing to memory Maisch's text. While I had learned the A. B. C. of vegetable pharmacognosy by collecting drugs and learning something about them from books, I acquired a notion of something more worth while by reading "Flueckinger and Hanbury's Pharmacographia," by reading of hashish eaters and amok runners in the "Daheim," accounts of exploration and travel in various books and magazines and above all by tramping and exploring myself. Shortly before entering upon my apprenticeship, I had read Freytag's "Debit and Credit." I recall to-day how the hero of the story enters, for the first time, the large warehouse where later he served an apprenticeship and how, on leaving the office and returning through the aisles between the bales and boxes, he touches with his hand the original packages that had come from all parts of the world. This young man had a vision and he became a success. Every time, when in later years I passed through narrow aisles between bales of drugs to the rear office of a New York drug house, I was reminded of this chapter of "Soll und Haben."

As Tschirch aptly puts it, the drug bale is one of the advance agents of civilization. Given a half-way proper knowledge of geography and history, the student of drugs must inevitably become a student of ethnography.

As already pointed out, there is no one method to teach pharmacognosy or anything else. When my preceptor related to us his travels and his first acquaintance with gentian in the Alps, when Professor Maisch told us about a botanical trip on which he had collected the pitcher plant, when in a pharmaceutical journal I read of the history of a drug used since antiquity, when in a dictionary I looked up the meaning of a drug name, and when in New York harbor I lingered about the docks where steamers from the East and West Indies unloaded fragrant spices, I entered the spirit realm of pharmacognosy.

If Maisch gave us the dry bones of vegetable materia medica in his text, he also gave us some of the spirit with which he was imbued in his personal remarks, occasionally interspersed in his recital of bare facts. A year ago, one of the members of this Conference informed us that he vitalized his class work by insisting on the etymology of the terms used. Another confessed that his hobby was history. If I were to teach pharmacognosy, I should, no doubt, stress the genetic relationship between plants yielding drugs as this relationship finds expression in the chemical constitution of its constituents.[1] Another teacher, no doubt, makes liberal use of lantern slides, still another of maps, both phytogeographical and commercial. Still another uses original packages[2] to rouse the interest and to stimulate the imagination of his students. Professor Richtmann spends every Saturday forenoon in the library with his thesis students, delving in the rich bibliographic treasures of past centuries.

If I have ventured to state how pharmacognosy should not be taught, I have not been so rash as to state how it should be taught. This will depend largely on the teacher and no one individuality may be substituted for another. A certain modicum of facts is necessary, no matter how acquired, but over and above that it is the individuality of the teacher that counts when he tries to give his students an inkling of the real science that does not consist of facts, and above all when he attempts to introduce his students into the spirit of his subject.

One point, however, requires emphasis almost as much to-day as it did in 1892, *viz.*, the preparation of the teacher of pharmacognosy. As I pointed out at the White Mountain meeting of the A. PH. A., the preparation of so many of our teachers is insufficient. At that time, not a few of our teachers of materia medica,

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[1] Professor Rosenthaler has recently pointed out that the botanical description of drugs, both gross and microscopic, while important so far as identification is concerned, after all has nothing to do with their final use based on physiological effect. This is due to its chemical constituents. As early as 1898, in my address as Chairman of the Scientific Section of the A. PH. A., I stressed this aspect of pharmacognostical and plant chemistry and illustrated how the chemical constituents of plants may be studied rather than memorized. See PROC. A. PH. A., 46, p. 214.

[2] It should scarcely be necessary to emphasize the importance of a museum in this connection. By a museum I do not mean the collection of drugs commonly used by the teacher. Possibly the best example is that of the Superior School of Pharmacy in Paris. However, we need even more than this, admirable as it is: we need a drug museum along ethnographic lines, under the roof of our college buildings and also under the vaults of heaven in our pharmaceutical gardens.

as the subject was then generally designated, were graduates in pharmacy who had supplemented their elementary college course in pharmacy by an equally elementary course in medicine. True, this gave them a broader view of the subject of drugs, but few, very few I fear, had ever supplemented this elementary knowledge by a more profound study of their subject. Work done after graduation from a year's undergraduate study in pharmacy, whether conducted in a medical college or elsewhere, is not necessarily graduate work though it may be post graduate in a sense. It is graduate work—to use a word rather than a lengthy explanation, not post graduate work—and all that is implied in the use of this term that should constitute the rock foundation of the teacher's armamentarium, be that teacher a teacher of pharmacognosy or of any other pharmaceutical subject.

PROCEEDINGS OF THE LOCAL BRANCHES

"All papers presented to the Association and Branches shall become the property of the Association with the understanding that they are not to be published in any other publication prior to their publication in those of the Association, except with the consent of the Council." —Part of Chapter VI, Article VI of the By-Laws.

Article IV of Chapter VII reads: "Each local branch having not less than 50 dues-paid members of the Association, holding not less than six meetings annually with an attendance of not less than 9 members at each meeting, and the proceedings of which shall have been submitted to the JOURNAL for publication, may elect one representative to the House of Delegates."

Reports of the meetings of the Local Branches shall 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.

BALTIMORE.

The second meeting of the season of Baltimore Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION was held at the Hotel Emerson on December 10, 1926, President R. L. Swain in the chair.

Secretary H. C. Christensen, of the National Association of Boards of Pharmacy, was the speaker. He told of his early training and experiences as a pharmacist, and named as the first essential for success the love of one's business or profession. He outlined the duties of the Secretary of the National Association of Boards and told of the efforts being made to secure the necessary pharmaceutical legislation for the different States.

Secretary Christensen spoke concerning the reciprocal registration of pharmacists and stated that it was the aim of the National Association of Boards to have reciprocity based on the personal qualification of the applicants at the time of the examinations; in other words, if at the time one took the examination your home State had the same laws as the State to which you desire to reciprocate, then registration would be made easy. He pointed out that this will necessitate the uniform standardization of the different State pharmacy laws concerning prerequisite educational requirements, graduation and practical experience.

The members of the Baltimore Branch expressed pleasure in having Secretary Christensen speak.

E. F. Kelly reported on the recent meeting of the National Drug Trade Conference in Washington.

H. H. Robinson brought greetings from the Baltimore Drug Exchange Bureau of the Baltimore Association of Commerce.

The music was furnished by Miss Martha Ann Bishop, contralto, assisted at the piano by Mrs. Katharine H. Lentz.

B. OLIVE COLE, *Secretary-Treasurer.*

DETROIT.

The December meeting of the Detroit Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION was held Friday evening, Decem-