other courses as Chemistry and Physics, there certainly is no need of them in our curricula, but I fear that such a fortunate condition does not obtain if my observations in four institutions located in widely separated sections mean anything.

I cannot agree that the material in the Syllabus under Theory of Pharmacy, Technique and Operative Pharmacy can be covered in one course of 10 semester hours, but should be in 400–432 hours (18–19 semester hours) including Technique (48 + 64 = 112), Galenical Pharmacy (64 + 96 = 160), Pharmacy of Inorganic (32 + 48 = 80) and Organic Materials (48 + 0 = 48 or 48 + 32 = 80) providing the material in the last two subjects named is not given in Organic Pharmaceutical Chemistry of a non-basic character. This with at least 10 semester hours of Dispensing (totaling 28–29 hours) is equivalent to about 25% of the total hours required for a B.S. degree. For the same degree in Chemistry, basic courses equivalent to about 35 semester hours are required. There is no question that Part D of Theory of Pharmacy can be adequately placed in other sections.

The author indicates that the textbooks of Pharmacy are too voluminous because of conditions mentioned; it appears that there is a dire need of revising these costly texts into books of a more theoretical nature rather than copies (to a great part) of the U. S. P. and N. F. A comparison with the later editions of English texts show some interesting differences as to presentation of pharmaceutical theory and subject matter.

I agree with Dean Briggs that we are not justified in requiring more than the usual 120 semester hours for a B.S. degree, and in order to stay within these bounds it behooves us to examine our curricula and course contents very closely, in order to withstand and avoid critical examination.

One value of this paper to my mind is the fact that it presents an idea that worthy work might be done in this Conference by devoting a portion of each annual meeting to a very serious and critical examination of course content, distribution, etc., using the Syllabus as a possible starting point with an idea of developing the pharmacy courses so that they might be of the greatest value in developing the knowledge and pride of the student of pharmacy in his profession.

THEORY OF PHARMACY AND ACADEMIC STANDARDS.

A DISCUSSION OF A PAPER BY THIS TITLE PRESENTED BY W. PAUL BRIGGS.

BY H. A. LANGENHAN.*

If you will define Pharmacy (Practical) as the application of the knowledge and training in Physics, Chemistry, Botany, Therapeutics, etc., *to the making of medicine*, you may readily realize that too much time is not given to this subject in any college.

The Syllabus outline is to help, in part, those who are not qualified to teach this subject, and those who do not understand what it is about, who naturally wonder what they should teach and why the subject is listed. Practical Pharmacy is not a special subject; it is a *specialized general subject.*

In order to teach in this broad field a foundation in all of the prerequisite

* Professor of Pharmacy, University of Washington, Seattle, Washington.

fields is necessary. The instructor must be sufficiently versed in Physics in order to demonstrate and explain the applications of this field to pharmaceutical operations and methods. He must be able to explain the application of colloidal chemistry in manufacturing, such as extraction emulsification, incompatibility, etc., the application of p_H in connection with preservation, incompatibility, etc. His training in organic and plant chemistry must be broad so that he may discuss the stability or instability of alkaloids, oils, glucosides and other plant constituents in galenical preparations, and the ever-present problem of incompatibility of these substances.

The question of solvents, vehicles, flavors, coloring agents all call for special information to be applied to the making of medicines. The applications of therapeutics and pharmacognosy are important.

The scope of the field of Practical Pharmacy as an applied subject is enormous. One could go on and on citing "applications" of these fundamental subjects.

Up to the present time pharmacy instructors have not been especially trained for this work, but have been compelled to develop their own course of instruction. The type of instruction given is influenced by preliminary training and by the fundamental training of the students entering the classes. It calls for a well-correlated curriculum and a coöperative faculty in order to properly qualify the student in these subjects so that the pharmacy instructor need not teach chemistry, materia medica and other fundamentals, but may devote his entire time to *application* of these fundamentals to the "making of medicine."

In discussing for example, Arsenical Solutions, the instructor should develop the history of arsenicals in general, the pharmacopœial (U. S. P. and foreign) development, the chemistry, the manufacturing, therapeutics, incompatibility, dispensing and correlate this summary with the story of the new arsenic remedies now in use. A skeleton outline of this single subject will indicate the various fundamental fields required for a fair understanding of the subject.

One serious handicap for pharmacy is the teaching of pharmacy students by non-pharmaceutical and non-coöperative teachers, in these fundamental subjects. With the proper preparatory instruction the student is ready for the pharmacy instructor who, if qualified, will find that he has insufficient time in any of the present existing curricula to cover the entire applied field. This application of fundamentals is not repetition, no more than advanced German is a repetition of beginning German. I will not be at Washington, so offer this material for you to present as personal property or any way you wish.

DRUG SALES SCHOOL.

Salesmen calling on the drug trade attest to the success of the Sales School of the Detroit Retail Drugists' Association.

An official of the Association said that repeatedly he has been informed that stores are taking on new appearances. Probably the greatest change is the quick appearance of attractive open displays, in many cases the addition of island displays in the store. Other stores have faced a general clean-up, new store arrangement and display material.

The success of the first school on drug store merchandising has led the Association to plan for another year. It is probable that next year the school will coöperate more closely with the pharmacy departments of local colleges should local druggists show sufficient interest to attract the sponsoring of lecturers. The final two sessions found an increasing attendance.—*Detroit News Booster.*