

In conclusion, notwithstanding the fact that practically 25 per cent. of all of the retail pharmacists of this country are stockholders and customers of the coöperative wholesale drug companies, if the movement was more thoroughly understood and the ideals and unselfish efforts were better known, a very much larger number would be enjoying the benefits and help that these unselfishly conducted companies are offering.

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## DISPENSING AND DISPENSARY PRACTICE FOR STUDENTS.

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*Introduction:* In commenting on the relative importance of dispensing as a part of the pharmaceutical curriculum, a teacher of dispensing, seemingly speaking for an entire faculty, stated to me recently that he felt dispensing should begin immediately upon entrance of the student and should continue and be graded throughout the two-, three-, or four-year courses. He would include in the course the study of Latin, weights and measures, medical properties, and doses. After the student would have mastered the beginning of metrology, this teacher would take advantage of the fact that some dispensing is very simple, involving nothing more than removing portions of the contents of a larger container to a smaller one and labeling properly, and begin the simple technique of dispensing and then grade into more difficult work concurrently with the student's progress in his work in other subjects. This instructor felt that the student should be imbued at the earliest moment with the sense of responsibility and with the consciousness of professional dignity, which he thought accrued from the nature of the work of dispensing and from the contact with the public which it involves, more than from other divisions of the curriculum or practice.

According to some inquiries and observations I have made since, this view-point is not an isolated one. It may therefore be pertinent to discuss the matter here briefly under three headings:

1. The Place of Dispensing in the Curriculum.
2. The Quantitative Relation of Dispensing to Other Subcourses.
3. The Scope and Nature of the Course in Dispensing.

*I. The Place of Dispensing in the Curriculum:* A thoroughly competent pharmacist recognizes that all of his training and experience culminate in that part of his professional activity which consists in the compounding or dispensing of prescriptions, because the delivery of the compounded medicine to the patient is the direct and final service which the pharmacist renders to the public. In this final service is involved a previous and indirect study and knowledge based upon and extending deeply down into the roots of all of the basic sciences and arts constituting the foundations of all the departments of every well-formulated pharmaceutical curriculum. Dispensing is therefore the specialized application of a broad, comprehensive knowledge and training towards the particular end, with the participation of the physician, of providing competent medication for those who need it. The responsibility and liability of the pharmacist reach their greatest degree at this point, for here the practitioner surrenders possession of the compounded medi-

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icine. With this surrender goes the implied warranty and guarantee that the medicine has been prepared with all of the carefulness, skill and efficiency required by the statutes and that all of the ingredients fully meet the pharmacopœial or other designated requirements. (It has always seemed to the writer that upon the basis of this responsibility, involving life and death as it does, the practice of pharmacy merits the fuller recognition by the public of the status of a profession.) All this, however, as I see it, has only little to do with the place of dispensing in the curriculum. Dispensing alone is not the practice of pharmacy. To learn to dispense may be the final aim and purpose of the student but he cannot become proficient in the art without completing all of the other divisions of the curriculum, most of them previously and some concurrently, and his qualification as a dispenser bears a direct ratio to his qualifications in the many other divisions of the course of study, each one of which is essential to the rounding out of a good general course of study in a college of pharmacy. The question, then, of the place of dispensing in the curriculum is one of sequence. Every well-formulated and balanced course of study is graded and the wisdom and thoroughness with which this is done depend upon the good judgment, coöperation and general ability of the faculty or others having the matter in charge. None of these, as far as I know, admit the student to dispensing at once upon entering. On the other hand, practically all faculties put dispensing into the second half or last third of the degree course and there is where it rightly belongs. A time will come, indeed it is on the way, when colleges, probably through the American Conference of Pharmaceutical Faculties, will more greatly unify and standardize their courses and establish uniform course prerequisites. Then all teachers and faculties will recognize, as most of them do now, that logically there are several prerequisites to dispensing and that it is absurd to establish dispensing as a subcourse without prerequisites.

*II. The Quantitative Relation of Dispensing to Other Subcourses:* A regular college course consists of the aggregate of the subcourses. Many of the latter have just grown up or were formulated or given by the respective instructors without regard for or adaptation to the content or extent of other subcourses. This fact accounts for the unbalanced courses of studies of some colleges. It is excusable and in some cases commendable that faculty members should have exaggerated ideas of the importance of their respective courses. There are instances where enthusiastic and aggressive faculty men have succeeded in over-emphasizing and over-developing their own departments at the expense of others. Not only should each subcourse be graded but the entire curriculum should be graded, leveled and harmonized in an equitable way. It is a dean's business to see that this is done. In most colleges the curriculum is fairly well balanced, the weights or values of the subcourses being expressed in units based upon the number of lecture or laboratory periods, or upon both, of the respective subcourses. The unit or credit value of each subcourse should be determined by the collective judgment of the entire faculty and not by the judgments or wills of the respective instructors individually. The sequence of the subcourses and their prerequisites should also be established by the whole faculty collectively and coöperatively. This should also apply as to what shall constitute the several subcourses and what their respective contents should be. With such a procedure for establishing equity in a curriculum, it would not be easily possible to weight the subcourse of dispensing with what should constitute sepa-

rate subcourses in metrology, Latin, therapeutics and posology as suggested by the instructor in dispensing referred to above.

*III. The Scope and Nature of the Course in Dispensing:* This should be determined as suggested above by the entire faculty. Most courses in dispensing are well composed and I will therefore not go into details in this respect. I desire to emphasize rather the desirability or indeed the need of making the course as practical as possible to afford a wide and varied experience for the students. Every college should provide opportunity and practice for students in the compounding and dispensing of actual prescriptions written by practicing physicians for actual patients. This can usually be done most easily and effectively by taking over or taking charge of, the dispensing departments of dispensaries or hospitals. I do not advocate conducting actual drug stores by colleges as part of their teaching activities. Possibly that will develop as a progressive step later on when practical drug store experience will no longer be required by law. At present pharmacists would not generally approve such a departure because of the competition involved.

The College of Pharmacy of the University of Minnesota has been in charge for over a quarter of a century now of the dispensing of prescriptions in the university free dispensary, and in the university hospital since its establishment. The dispensary practice is part of, and runs concurrently with, the latter portion of the college course in dispensing and affords practical dispensing experience of the most valuable kind for the senior students. For the purpose of this experience the senior class (the third-year students in the regular three-year course, and the third- and fourth-year students in the four-year course) is divided into sections of four or five students who receive instruction and direction by the dispensary and hospital pharmacists who are members of the pharmacy faculty and who are paid jointly from the budgets of the colleges of pharmacy and medicine. The students have previously had considerable didactic and laboratory instruction in the well-equipped college dispensing laboratory and are sufficiently trained to enter upon the dispensing of prescriptions for actual patients. Their work is critically supervised and directed and checked by the hospital and dispensary pharmacists who have been for many years graduates of the college. For many years now the students have assisted in dispensing an average annually of well over 22,000 prescriptions. Most of the prescriptions are formulated ones and have to be compounded. Another very valuable experience factor lies in the fact that the students prepare in the pharmacy laboratory nearly all of the preparations that enter into the prescriptions. They also manufacture many of the pharmaceutical chemicals and cultivate many of the botanicals in the medicinal plant laboratory.

In this connection it may be worth mentioning that the college has had an affirmative influence in getting the dispensary and hospital clinicians to write formulated prescriptions in connection with their clinical instruction of the medical students.

A number of colleges have similar facilities. It is hoped that soon all will become fully effective in this respect.

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#### THE CENTENARY OF THE ELECTRICAL AGE.

In 1824 Michael Faraday, then a young research worker, made his first experiment to

see if he could produce electricity from a magnet; from this experiment the age of electricity may be said to date. Faraday worked under Davy, and Davy was for some time an apothecary's apprentice.