

# THE DEPARTMENT OF THE AMERICAN ASSOCIATION OF COLLEGES OF PHARMACY

C. B. JORDAN—CHAIRMAN OF EXECUTIVE COMMITTEE, A. A. C. P., EDITOR OF THIS  
DEPARTMENT.

"The question of whether students of pharmacy should be given fundamental courses in chemistry and later make the application of the chemical knowledge to pharmacy, or whether in such courses as qualitative analysis, quantitative analysis and organic chemistry the choice of material will be such as to give to the course a pharmaceutical significance, will probably never be settled. If students of pharmacy are taking these courses with other students in the University, naturally the instructor must give a general course. On the other hand, if only students of pharmacy are in the course, the instructor can very easily pick his material from the pharmaceutical world and thus make the course more practical. Some one has truly said that organic chemistry is organic chemistry and should be taught as such, regardless of whether the students taking it are enrolled in Science, Pharmacy, Agriculture, etc. Your Editor is inclined to believe that this is an extreme view to take on the subject and that, in the case of a class composed entirely of students in any one school, the course should be made as practical as possible for the work that these students are expected to follow after graduation. The following paper on 'The Scope of a Course in Organic Pharmacy' will be interesting to all teachers of organic chemistry. I am not aware of any other college that gives a course known as 'Organic Pharmacy.' However, such a course is probably necessary and valuable, if the organic chemist treats his subject from the purely scientific standpoint."—C. B. JORDAN, *Editor*.

## THE SCOPE OF A COURSE IN ORGANIC PHARMACY.\*

BY ANTOINE E. GREENE.<sup>1</sup>

The proper division of the subject matter of the present course in pharmacy offers a problem which is well worth the serious consideration of the teaching profession. Then after the division comes the necessity for a systematic arrangement of course material, based first upon general instructional necessity, and, secondly, upon local attitude toward specific instruction.

In general we may commence by dividing pharmaceutical instruction into those subjects coming under the following heads:

1. Pharmacy. 2. Chemistry. 3. *Materia Medica*—Pharmacognosy. Pharmacology. 4. Related Subjects. 5. Cultural Subjects.

Under the last two heads we might place such subjects as physiology, bacteriology, botany, mineralogy, physics, economics, psychology, English, the foreign languages, etc.

Under the general heads of Pharmacy, Chemistry, etc., we may conveniently separate them into major and minor or accessory courses. For instance, pharmacy might be divided into theoretical, practical, dispensing, inorganic, organic, commercial pharmacy, etc., as majors, while the minor or accessory subjects would naturally embrace pharmaceutical mathematics, Latin, history, seminar, etc.

Now as to the subject of this paper, we naturally consider organic pharmacy to be a major division of pharmaceutical instruction, devoted to a comprehensive study of those organic compounds which are official in the United States Pharma-

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copœia, Decennial Revision, and the National Formulary, Fifth Edition. Sufficient attention, time permitting, should be directed to those new and non-official organic medicaments of therapeutic and pharmaceutical importance and interest.

We draw off all of the organic compounds from the official standards and group them according to an orderly chemical classification. It has been found convenient to use the order set down in "Elements de Pharmacie," by Andouard and Pastureau (Latest Edition, Paris). That is, we take up the study of the hydrocarbons of the aliphatic series, then the halogen derivatives, the alcohols, ethers, aldehydes, ketones, acids, esters, amines and amides, sulphur compounds, amino acids, proteins, carbohydrates and enzymes. Turning, then, to the aromatic hydrocarbons, we follow a similar procedure.

Although pharmacy is permeated with chemistry and chemical applications, we assiduously avoid giving our course too much of a chemical flavor. It is so easy to steer the course into dangerous waters by teaching not wisely, but too well. It is questionable whether the teacher in pharmacy is at all equipped to teach organic chemistry, particularly the organic chemistry of these fertile times. To the chemist belongs the responsibility for thorough instruction in the fundamentals of theoretical and practical organic chemistry. Organic Pharmacy deals in no way with complicated syntheses, involved reactions or elaborate formulas. The scope of organic pharmacy is to emphasize the salient facts concerning those organic medicaments of pharmaceutical and therapeutic importance. And the instructor of such a course will find his time well taken up gaining a wholesome familiarity with the hundreds of medicinals which have crowded the medicamentarium.

It is manifestly absurd to expect the professor of organic chemistry to pause and point out the pharmaceutical applications of the malonic acid ester and acetoacetic acid ester syntheses in large, mixed classes. In our course in organic pharmacy, the student is given some insight to the pharmaceutical utilization of many of these important synthetic reactions, which he once learned long since and then forgot awhile.

There is frequently the danger of serious departmental incompatibility arising because of fundamental ignorance in the necessity for adequate pharmaceutical instruction. The department of chemistry, in particular, may unfortunately suffer from the erroneous belief that the pharmacy department is attempting to re-teach chemistry or to impart wrong notions of chemical principles. We have had such an unfortunate misunderstanding in our own University. After an enlightening series of conferences, however, the difficulties were ironed out, and an *entente cordiale* established. The instructional corps in organic chemistry considers our course in organic pharmacy no more a purely chemical subject than we deem their course in chemical preparations a branch of inorganic pharmacy.

The Pharmacopœia and National Formulary would hardly fill the need of our students in organic chemistry. We would be hopelessly lost if we had to use a Richter, Cohen or Norris in teaching organic pharmacy. The Pharmacopœia is our "Bible;" the National Formulary is our "prayerbook."

It is obviously impossible to make a detailed study of all organic compounds of therapeutic importance or pharmaceutical value. We can only confine ourselves to the most important. By continually focusing the attention of the student upon

the organic materials which he uses daily in prescription and laboratory practice can we meet with a modicum of success.

There may be some unnecessary duplication of subject matter, but by extra departmental conferences and course analysis, such repetition may be reduced to a minimum. Then, a certain amount of repetition of important subject matter may be considered not only wise, but valuable. Such time is surely not wasted.

The value of the course may be determined by ascertaining how much better the student is acquainted with the organic materia medica than before. This may be found out through written and oral examinations. In pharmacognosy and galenical pharmacy we examine the students on their knowledge of the drugs and preparations with which they come in contact daily. We expect them to recognize by color, odor, taste and feel a large number of crude drugs. As they proceed in the identification of numerous specimens, we expect the recognition to strike responsive chords in their memories as to definition, official descriptions, impurities, constituents, doses, uses and preparations into which the drug enters. Some may throw up their hands in horror at such archaic methods of instruction. But in the greatest number of cases, pharmacognosy is still so taught.

Likewise, in organic pharmacy, we expect our students to differentiate thymol, camphor, menthol and chloral hydrate. While trichloroacetic acid is derived from trichloroaldehyde, we expect them to know it from the generic aldehyde. There are a large number of facts of pharmaceutical importance which should be brought to the attention of the student. Familiarity may breed contempt, but students cannot become too well acquainted with the material which they must daily handle. Because the physician and surgeon seldom use all of the anatomical knowledge of their student-days in daily practice is no reason why particular attention should not be placed on a sound, fundamental instruction in anatomy during the preclinical training. It is our firm belief that the course in organic pharmacy has a proper justification for its present place in the curriculum.

Some there are who would term such a course as organic pharmacy—pharmaceutical chemistry. The course as given includes no laboratory work. Specimens of official organic compounds are available for individual and collective study by the student. We encourage the student to become familiar with the physical and organoleptic characters of the material studied. The absence of laboratory instruction may be deplored, but, at present, we have neither time nor space for adequate laboratory instruction. Then, the additional laboratory work would justify calling the course Pharmaceutical Chemistry, since it would of necessity include qualitative and quantitative analysis of these medicaments.

It has been our experience to find that ninety-nine lecture and recitation hours are the optimum—minimum of time in which to cover the subject of organic pharmacy. Of course, we could use three times as many clock hours, but we are faced with the problem of overloading the curriculum. Just as there are those pests of the highway known as "road hogs," there are, in our colleges and universities, equally obnoxious individuals who might be termed "curriculum hogs." All of us have had contacts, often disagreeable, with the teacher who believes that his subject is the one and only part of the curriculum worthy of consideration. Therefore, we hope that our ninety and nine hours are not crowding other equally as important courses to the wall.

The instructor in organic pharmacy should visit all of the contributing departments of the course in pharmacy in an attempt to understand just where his field begins and ends. These visits may be productive of wholesome and worthwhile contacts. Too often the pharmacy department stagnates in its own isolation. With his own co-workers, he should have frequent contacts and conferences, seeking to develop a course which will round out and strengthen other courses which may touch his own. With free and open mind, he should be ready to receive both criticism and suggestion.

If he is so fortunate as to make the official organic compounds familiar to the students as the faces of their friends, he should call himself a successful teacher of his subject.

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### INCREASING PRESCRIPTION PROFIT POSSIBILITIES.\*

BY FRANK A. DELGADO, \*\* BUSINESS SPECIALIST.

"A paper by Mr. Frank A. Delgado needs no editorial introduction. The splendid work that Mr. Delgado did in the St. Louis Survey makes him an outstanding figure in pharmaceutical economics. The following paper on 'Increased Prescription Profit Possibilities' will merit the careful reading of any one teaching the subject or actually engaged in prescription business."—C. B. JORDAN, *Editor*.

It is generally customary when addressing a group of professional men to pay tribute to their profession. No one is more cognizant than myself of the debt civilization owes professional pharmacy. Pharmacy is the mother of medicine and the original source of many forms of research. Unfortunately, the achievements of pharmacists have frequently been credited to other activities. Pharmacy does not differ from medicine, law and other professions in the respect that it also has its economic side. This is the side with which the National Drug Store Survey is concerned.

Physicians, both "young" and "old," as regards length of practice, write more prescriptions containing official ingredients than proprietary ingredients. However, many "old" and "young" doctors individually showed decided preferences for official or for proprietary ingredients, the length of practice seeming to have no bearing on the particular choice.

There is hardly such a thing as a completely stocked prescription department. The pharmacist will require 325 different ingredients to fill the first 500 prescriptions compounded, the next 500 will require an additional 185, the third 500 an additional 118, and the fourth, fifth and sixth blocks of 500 will require 218 additional different ingredients or an average of approximately 73 different ingredients per block. Even after he has filled 8000 prescriptions, up to and including his ten thousandth prescription, he will be required to buy 31 new ingredients for every block of 500 prescriptions that he fills. Prescriptions written for items not in stock usually call for proprietaries.

Professional pharmacists charge less for prescriptions containing official preparations than those containing proprietaries.

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\*\* Bureau of Foreign and Domestic Commerce.