

THE DEPARTMENT OF THE AMERICAN ASSOCIATION OF COLLEGES OF PHARMACY

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DEPARTMENT.

"Teachers of pharmacy have for years had difficulty in the exact definition of terms applied to certain courses, especially those that have been placed under the general heading of *Materia Medica*. The report of the Committee on Curriculum and Teaching Methods presented at the 1930 meeting of the A. A. C. P. (see 1930 Proceedings, pages 58-73) emphasized this difficulty and the Committee recommended that the old term '*materia medica*' be abandoned because of lack of definite significance. This was accepted by the Association. The following paper by Dean Bliss further emphasizes the importance of care in the use of terms, especially in the description of courses in colleges of pharmacy. This paper is an abstract of the material submitted by Dean Bliss as chairman of the Teacher's Conference on *Materia Medica* at the last meeting of the Association."—C. B. JORDAN, *Editor*.

THE TERM "PHARMACOLOGY," ITS MEANING, AND THE SCOPE AND CONTENT OF A COURSE IN PHARMACOLOGY FOR PHARMACY STUDENTS.

BY A. RICHARD BLISS, JR.*

Following the suggestion made at the last Conference, we have decided to attempt to find out what we have been actually teaching under the titles "Pharmacology," "Materia Medica," "Pharmacognosy!" Is the professor himself becoming educated? Someone has said that education is one of the most painful, delicate and private operations in the world. It is not imposed from above; it is acquired from below. It is not found in any formal program, but is almost a by-product. It is, after all, what happens to you!

When the writer of this paper was requested to compile an Outline of Pharmacology for the tentative draft of the new Pharmaceutical Syllabus, he undertook the task assigned to him in a spirit of service. In order to secure as representative an expression of opinion as possible, the author mailed a communication to all of those individuals who are in charge of departments of or courses in Pharmacology or *Materia Medica* in the schools of pharmacy of the United States of America and Canada, in which he asked the following questions:

First: What is your definition of the term "Pharmacology?"

Second: What is your definition of the term "Materia Medica?"

Third: College of pharmacy catalogs carry the terms "Pharmacology," "Pharmacodynamics," "Pharmacognosy," and "Materia Medica" in defining the same course. What term do you feel should be employed to label a course which embraces the titles, definitions, constituents, solubilities, odor, taste, color, state of matter and doses of drugs and chemicals, and similar data concerning their preparations and derivatives?

Fourth: If, in addition to the foregoing (in "Third" immediately above), the actions (pharmacodynamics) and uses of the drugs are included, what term, descriptive of the course, should be used?

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The answers to these communications may be assumed to represent the collective opinion of the instructors who are actively engaged in teaching the courses in Pharmacology, Materia Medica, etc., and are decidedly valuable data.

The variations in the school- and college-catalog titles of courses in Pharmacology, Materia Medica, Pharmacognosy, Pharmacodynamics, prompted the author to compile the following definitions:

Webster's New International Dictionary of the English Language gives the following information:

(1) "phar'ma-co- (fär'mà-kô-)" is the "combining form from Greek *φάρμακον*, drug, medicine, poison."

(2) "phar'ma-col'o-gy (-jī), *n.* (pharmaco- + -logy.) The science of drugs, including materia medica and therapeutics."

(3) "phar'ma-col'o-gist (fär'mà-kôl'ô-gīst), *n.* One skilled in pharmacology."

(4) "ma-te'ri-a med'i-ca (mà-tē'rī-a mēd'ī-kà). (L. See MATTER; MEDICAL.)
1. Material or substance used in the composition of remedies; a general term for all substances used as curative agents in medicine. 2. That branch of medical science which treats of the nature and properties of all substances employed for the cure of diseases; one of the two branches of pharmacology."

(5) "ther'a-peu'tics (-tīks), *n.* (Cf. F. *thérapeutique*.) That part of medical science which treats of the discovery and application of remedies for diseases."

(6) "phar'ma-co-dy-nam'ics (-dī-nām'īks; -dī-), *n.* (*pharmaco-* + dynamics.) That branch of pharmacology which treats of the action and the effects of medicines."

(7) "phar'ma-cog'no-sy (-kōg'nō-sī), phar'ma-cog'no'sis (-kōg-nō'sis), *n.* (*pharmaco-* + Gr. *γνώσις* a knowing.) Pharmacology, or esp. that branch of it treating of the characteristics of crude drugs and simples."

(8) "phar'ma-co-pe'di-a (fär'mà-ko-pē'dī-a), *n.* (NL.; *pharmaco-* + Gr. *παιδεία* education.) Instruction concerning medicinal drugs and preparations; the science of drugs."

(9) "phar'ma-co-pe'dics (-pē'dīks; -pēd'īks), *n.* The scientific study of medicinal drugs and preparations."

(10) "phar'ma-cog'ra-phy (-kōg'rā-fī), *n.* (*pharmaco-* + -graphy.) A scientific description of drugs."

The replies to the letter disclosed the facts that exactly two-thirds of the instructors who replied follow the medical textbooks "restricted" definition of Pharmacology, while the remaining third adhere to the "broad" definition.

Most of the authors quoted define Materia Medica as the study of the properties of drugs (crude drugs, agents, appliances, medical materials), including their titles, origin, structure, composition, classification and identification (*Pharmacognosy*), their actions (*Pharmacodynamics*), their uses (*Therapeutics*), their doses (*Posology*), their preparations and derivatives and the doses of the same, and, in cases of toxic drugs, their poisonous actions (*Toxicology*). It is evident that these authorities consider the term "Materia Medica" as a synonym for Pharmacology in its "general or broad sense."

Two-thirds of the instructors who replied to the letter agree with the "general" or "broad" definition of Materia Medica. In one institution the term is not defined, but simply used as a departmental or divisional title or heading. Two instructors insist that the term "Materia Medica" should be used only in the sense of a list of materials employed in the treatment of disease.

In reply to the third paragraph of the letter:

"College of pharmacy catalogues carry the terms 'Pharmacology,' 'Pharmacodynamics,' 'Pharmacognosy,' and 'Materia Medica' in defining the same course. What term do you feel should be employed to label a course which embraces the titles, definitions, constituents, solubilities, odor, taste, color, state of matter, and dose of drugs and chemicals, and similar data concerning their preparations and derivatives?"

One-third used the term "Materia Medica," one-third employed "Pharmacognosy," and the terms "Pharmacology," "Descriptive Materia Medica," "Official Pharmacy and Pharmacognosy" were suggested by one instructor in each case.

The replies to the fourth paragraph of the same letter:

"If, in addition to the foregoing (in "Third" immediately above), the actions (pharmacodynamics) and uses of the drugs are included, what term, descriptive of the course, should be used?"

showed 22% in favor of the term "Materia Medica," the same number favoring the term "Pharmacology," and one instructor each in favor of the following: "Pharmacodynamics," "Pharmacology and Pharmacodynamics," "Pharmacology or Materia Medica," "Pharmacognosy and Materia Medica," "Pharmacology and Therapeutics," "Pharmacology and Pharmacognosy," "Pharmacodynamics and Therapeutics." The terms were used in the following frequency order:

Pharmacology, 9
Materia Medica, 6
Pharmacodynamics, 5
Pharmacognosy, 3
Therapeutics, 3

The instruction concerning medicinal agents offered by the schools of pharmacy is not given by any *one* department or division, but instead is taken care of *in part* by Chemistry, Botany, Drug Assaying, Pharmacy, Bacteriology, Physiology, Pharmacognosy and "Materia Medica" or "Pharmacology." These subjects, however, do not cover all of the instruction deemed fundamental and essential. None of the instruction concerning drugs offered by these departments or subjects is complete or sufficient in itself. Neither would the consolidated material given in these courses represent that modicum needed by the pharmacy student. It would not be practical or desirable to attempt to attain the desired results by expansion of all of these courses. The schools of pharmacy, consequently, have attempted to consolidate, correlate, strengthen and elaborate the study of drugs, which is offered in part by each of the departments or subjects listed above, by giving courses entitled "Pharmacology," "Pharmacodynamics," "Therapeutics," etc. All are agreed as to the desirability of uniformity in the title of such a course. There is a diversity of opinion among those giving this instruction as to the best title. There is little, if any, serious difference of opinion about the general content of such a course, the overlapping of the instruction in Chemistry, Pharmacognosy, etc., the inclusion of *some* instruction in pharmacodynamics and in therapeutics as a part of the course, and the necessity for and the desirability of having such a course even though there may be included some logical repetition and duplication. This course should take up all of the drug strands woven by other courses

and the loose ends, add needed strands to them, strengthen them where need be, and weave all into a united whole.

The suggestion has been made that a word be "coined." The chairman of this Section is not in favor of such a plan, particularly in view of the fact that authority is available warranting the *correct* use of a term as a title for the course in question. Webster's International Dictionary defines "Pharmacology" as "The science of drugs including *Materia Medica* and Therapeutics." In this sense the term "fills the requirements." Why worry about the "restricted" use of the term by some? How did the use of the term "Pharmacology" as a synonym for "Pharmacodynamics" come about; is it correct; and where is the authority for such use? We, therefore, believe that the term "Pharmacology" is highly satisfactory and appropriate as the title of a course, the scope and content of which have been outlined above.

The functions of the course in Pharmacology are: (1) To bring together certain information and facts concerning drugs and other agents which have been developed in other courses of the curriculum, such as Pharmacognosy, Chemistry and Pharmacy, to correlate this material, to organize it preferably according to some "use" (therapeutic) classification. (2) To elaborate this material where necessary. (3) To add to the list of substances studied in the other courses such materials as are warranted by common usage, "New and Non Official Remedies," "Useful Drugs" and the "Recipe Book" of the AMERICAN PHARMACEUTICAL ASSOCIATION, since it is patently impossible and undesirable for other departments or courses to include, individually or collectively, *all of the materia medica* as a part of their instruction. (4) To acquaint the student with the common or major *therapeutic and other uses* of the drugs and other materials the pharmacist sells and dispenses, the *reasons for such uses*, and the *manner in which they are effective*, keeping always in mind the facts that (a) it is more important that the pharmacodynamic and therapeutic information of the pharmacist should be sound than it should be either deep or extensive, and (b) that the pharmacist should possess a synthetic conception of the important actions of all important drugs, but more particularly the toxic ones. (5) To familiarize the student with the doses of drugs, and the proper methods of administration and application. (6) To familiarize the student with the more readily recognizable symptoms of poisoning by the most common and important poisons, and with the preliminary emergency steps useful in the treatment of cases of poisoning. (7) To impress the student with the necessity for continuous care and caution in handling and dispensing the numerous substances which are very toxic, especially those which may easily be mistaken for less potent ones, and to convey similar information to purchasers of such substances. (8) To acquaint the student with those methods of bio-assay found in the U. S. Pharmacopœia.

Experience and study have shown that the course can be handled more profitably and more economically by treating the subject matter as a whole, than by separating the material into subject divisions. Accordingly, the following plan of treatment is suggested:

I.—Group Treatment:

1. Definition of the group title.
2. History of the group.

3. General pharmacodynamics of the group. 4. General therapeutics of the group.
5. General toxicology of the group; Poisonous actions, symptoms, antidotal treatment, dangers involved in antidotal treatment.

In discussing the pharmacodynamic and therapeutic portions of the course it will be found most satisfactory to discuss first the general pharmacodynamics and general uses of each class, group or subgroup, bringing out any special or individual differences in actions or applications when the other facts concerning the individual agent are taken up.

A similar synoptic presentation of the toxicologic portion will be found highly satisfactory, leaving any special or detailed toxicology of individual drugs for discussion when the agent itself is discussed.

NOTE: In taking up the pharmacodynamics, the therapeutics and the toxicology, the material should be presented to the student in such a fashion as to show conclusively that the object of this instruction is *not to fit the pharmacist for the treatment of disease, but instead to teach the student the broad principles which guide therapeutics, the objects to be accomplished, and the agencies that may be employed.* Sollmann says (in "The Action of Drugs"): "To the sensible and tactful pharmacist, some knowledge of these matters (actions, uses and doses) is very useful, and indeed necessary. As a tradesman, the public expects him to be familiar with the uses to which his wares are commonly put, and with the manner of their use. As a professional man, he can coöperate with the prescribing physician much better if he has an intelligent understanding of the broad principles which guide treatment, of the subjects which are to be accomplished and of the means that are utilized. The pharmacist himself will be protected against many blunders in the exercise of his higher professional function, the compounding of prescriptions. He will be able to protect the public against the errors of others, as well as his own. He may, by the exercise of some tact, put the physician under lasting obligations. In cases of poisoning, he has often the opportunity to institute correct preliminary treatment which may decide the patient's life."

II.—*Individual Agent Treatment:*

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| 1. Latin and English titles, abbreviations, synonyms, definitions, standards, origin, preparation, preservation and physical properties including solubilities. | 5. Dose. |
| 2. Constituents. | 6. Preparations and doses. |
| 3. Special pharmacodynamics. | 7. Special toxicology. |
| 4. Special uses. | |

Printed outline forms may be used to advantage by the student. The items in the first, fifth and sixth paragraphs above, in the cases of U. S. P. and N. F. substances, are found in those volumes and entered on the forms by the student. The other items are supplied and discussed by the instructor.

Laboratory Work (Experimental Pharmacodynamics and Bioassaying).—The laboratory courses in Pharmacy, Chemistry, Botany, Toxicology, Bacteriology and Pharmacognosy provide a large portion of the "practical" or laboratory work of the course in Pharmacology, with the exception of the Pharmacodynamics, certain portions of the Toxicology, and the Bioassays. Consequently, the remainder of the laboratory portion of the course in Pharmacology should consist of (a) a study of gross specimens of the *materia media*; (b) elementary Experimental Pharmacodynamics; and (c) Bioassaying.