

THE QUOTA OF PHARMACOLOGY AND THERAPEUTICS IN THE MEDICAL CURRICULUM.\*

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My objective in planning this paper was to determine whether the apparently lessened interest in prescription writing among recent medical graduates is due to a lack of confidence in the pharmacist or to some other cause. The following questionnaire was sent to the class "A" medical schools of the United States and Canada:

QUESTIONNAIRE.

In your under-graduate medical, "M.D.," course how many actual hours of instruction are given to the following subjects:

Table with 2 columns: Lecture, Laboratory. Rows include Pharmacology, Therapeutics, Remarks, Signed by, School.

Sixty-two per cent of the recipients answered. The geographical range of those answering is complete enough to give us a true picture of the general conditions which prevail relative to the allotment given to pharmacology, materia medica, pharmacy and therapeutics in the undergraduate medical curriculum of to-day.

The American Association of Medical Colleges has summarized the minimum requirements for an "M.D." course as follows:

CHART No. 1.

The requirements for admission to and graduation from colleges holding membership in this association are 15 units of high school work and two years (60 semester hours) of college work.

The entire course of four years shall consist of not less than 3600 hours, and shall be grouped in divisions and subdivided into subjects, each division to be allotted approximately the time on a percentage basis, as shown in the following schedule:

Table with 2 columns: Subject, Percentage. Lists subjects like Anatomy, Physiology, Biochemistry, Pathology, Pharmacology, Hygiene, General medicine, General surgery, Obstetrics, and Electives with their respective percentages.

\* Read before Section on Education and Legislation, A. Ph. A., Philadelphia meeting.

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CHART NO. 2.

Medical school no.	Pharmacology.			Therapeutics.			Supplementary Subjects.				
	Total hrs.	Lect.	Lab.	Total hrs.	Lect.	Lab.	Mat. Lect.	Med. Lab.	Pharmacy Lect.	Lab.	Toxi-cology.
1	66			11 elective							
2	96	30	66	11 also have clinical clerkships							
3	104										
4	108	36	72	120							
5	108	36	72	72							
6	110			40.5				72			
7	112			16			48	44			
8	120	48	72	36							
9	120	30	90	85	50	35		78			
10	120	32	96	64							
11	132	66	66	22							
12	135	45	90	Included in medicine							
13	135	55	90								
14	135	60	75	30 also clinical ward studies							
15	144			64				48	48		
16	144	48	96	32				32	16		
17	144	56	88	32							
18	150										
19	150	75	75	60							
20	150	90	60	60							
21	156	64	92	96							
22	165	99	66	This includes therapeutics, etc.							
23	174	58	116	This includes therapeutics, etc.							
24	180	74	106	32							
25	180	90	90		45	60					
26	187	88	99	99							
27	187	85	102	68							
28	189	108	81								
29	190	110	80	33							
30	192	112	80	84			192				36
31	192	112	80	64							16
32	192	64	128	32 Therapeutical laboratory, part of clinical medicine							
33	195	120	75	60							15
34	198	66	132	24							
35	203	130	73	66	33	33					10
36	208	128	80								40
37	208	112	96	This includes therapeutics, etc.							
38	233	133	100							33	44
39	242			This includes therapeutics, etc.							
40	272	112	160	32							

Chart No. II was arranged from the answers to the questionnaire.

Examining the schedule, I believe you will be astonished at the lack of uniformity and the great variation in standards herein revealed. The courses in pharmacology in some schools are not separated into lecture and laboratory classes; therefore, only totals are recorded.

The number of lecture hours given to this branch, pharmacology, range from 30 to 133; laboratory hours from 60 to 192. The same lack of agreement is discovered in therapeutics; the variation in this case is in lecture hours from 11, all elective, to 16 hours required, to 120 hours.

The chart shows that some colleges teach materia medica and pharmacy in addition to therapeutics, pharmaco-dynamics, etc. Those of this group giving the most hours of instruction in these supplementary courses total materia medica 48, pharmacy, 48; another, materia medica, 192, pharmacy, 36. In justice to the colleges showing a small amount of required work in the branches covered by the questionnaire, it can be said in some cases they offered explanations to the effect that these branches are incorporated into their clinical instruction and an attempt thereby is made to train the student. It is needless to state that such an arrangement is poor pedagogy and cannot successfully supplant organized and systematic class instruction in the general principles involved.

After carefully examining Charts Nos. I and II, and analyzing the figures, I am inclined to believe you will agree with me that one of the principal reasons for the decline of prescription writing for U. S. P. and N. F. preparations, as well as the successful exploitation of the physician by the proprietary medicine manufacturer, is due to the unequal distribution of subject material and the improper emphasis placed upon the laboratory and surgical parts of the modern medical course in contrast with the attention given to the medical side.

It is evident that the primary function of undergraduate instruction in medicine is to prepare men and women for the general practice of medicine and not for a specialized field. Observation teaches us further that 85 per cent of the daily practice of medicine consists of non-surgical cases. Why then do we find pharmacology and its correlated branches constituting only four per cent of the entire curriculum? May I offer an explanation of this peculiar phenomenon? About 25 years ago American Medical Colleges awakened to their responsibilities as well as their shortcomings. They initiated standardization and strengthening movements on the laboratory side of their curricula.

During recent years the medical sciences have passed from the qualitative to the quantitative phases of their evolution. Clinical laboratory methods have supplemented older ways of diagnosis. The biologist, pathologist and physiological chemist have contributed greatly to this wonderful development. A marvelous technique has been elaborated and an enormous amount of data bearing on diagnosis and prognosis has been collected. The pharmacologist has not been asleep, but has made remarkable progress toward the quantitative in a very difficult field. Synthetic chemicals, also serum therapy, have to a large extent occupied his mind, and, aside from the novelty of these forms of treatment, the readiness with which they lend themselves to standardization and specific effects has made a compelling appeal to the pharmacologist's scientific sense to the obscurement of the older preparations which were mainly an inheritance of an empiricism, in many cases lacking scientific confirmation; therefore, in drafting new medical curricula the vast amount of material available and the compounding of discovery upon discovery has complicated the selection of the essentials, of their apportionment and of their proper emphasis during this transition period from the empirical to the scientific, with the result it is natural to expect that the several sciences underlying correct diagnosis would be unduly emphasized and the treatment side of medicine would suffer thereby. However, it must be evident to us, as important as diagnosis may be, that it is of little use to the patient unless the facts established guide the physician to the most fit and adaptable form of treatment known to apply

to the individual's case. If sufficient time were allowed in medical curricula to give proper attention to materia medica and its applications, the future physician should have an adequate equipment of such knowledge. In consequence he would foresee the necessity for and the advantage of the art of pharmacy. He would not only embrace the opportunity of using his scientific aids to diagnosis, but he would also use his knowledge of the materia medica for the specific treatment of the peculiarities in the individual patient rather than allow his patient and himself to remain at the mercy of some semi-secret preparation, the advocates of which are actuated by non-professional motives and whose product may nullify all of the physician's efforts and learning up to and including the treatment of his patient's sickness.

So far, my paper has been wholly critical, but I have a constructive suggestion to offer. You are no doubt familiar with the dissatisfaction of the rank and file of the medical profession with the present medical curriculum as expressed through the columns of the *Journal of the American Medical Association* and other medical periodicals. Now is the time, I believe, to enlist the pharmacologist and therapist in a movement to see that their very important branches of medical study are given a uniform and sufficient quota in the undergraduate medical course. Our missionaries must be carefully selected individuals from our organization whose personal contacts and prestige are well enough established to gain for them a respectful audience. In this way a great amount of good can be done for medicine, the public's welfare and for American pharmacy.

#### ABSTRACT OF DISCUSSION.

**J. G. Beard** said that he had found one of the finest fields for missionary work among medical students and he hoped that he had been able in a small way to give them a better understanding of what pharmacy is and a higher appreciation of the calling than they could possibly have gotten in any other way.

**William Mansfield** asked how Professor Beard divided his work, how much he devoted to the history of pharmacy and how much he gave to lectures and whether any work was done in the manufacture of official preparations.

In replying, Professor Beard explained that the Laboratory part takes in incompatibilities, not much dispensing, but quite a number of the official preparations are manufactured. The lecture part of the course varies from year to year.

**H. J. Goeckel** held that this was a very important paper and being primarily a pharmacist he thought that it brought out an opinion which this section should take up to show that medical schools are deficient in their system and there is dissatisfaction with their courses.

**H. C. Wood** said he had the privilege of teaching in a medical school and also in a pharmacy school, that he had been teaching therapeutics for more than twenty-five years and he was inclined to agree with Mr. Lakey in his main observations that the teaching of materia medica and allied subjects in some of the medical schools is deplorably deficient. However, he wanted to take issue with the author relative to the reason for this deficiency. He held very strongly to the philosophy that history repeats itself and the progress of medicine is in sight. A cycle is just ending which was brought about by a very famous clinician, one of whose claims to fame, at least, was his advocacy of what was known as therapeutic nihilism—he advocated putting patients to bed and seeing if nature would not cure them without interference by the use of drugs. He was a man of very remarkable ability and had a large personal following, and a tremendous influence on the medical thought of the United States. To him, to a very large extent, is attributed this therapeutic nihilism which was all the rage ten years ago. The men who are coming on to-day as teachers were educated ten years ago and they are still suffering from what they were taught as students; but in his opinion drugs are coming back into use again. He

wanted to remind members of the pharmaceutical profession that the history of medicine shows quite a number of resurrections. At one time every disease was treated with a lancet but after a while it was found that this method would not cure all diseases. He hoped to see the day when pharmacology or pharmaco-therapeutics will again come into its own.

Then followed a discussion of a resolution presented by the author on the paper.<sup>1</sup>

Speaking on the resolution, H. C. Wood said that he hoped this resolution would not be adopted. He was certain that it would not be received kindly by the medical profession; that the medical profession of which he is a member feels competent, whether this was the case or not, to run medical affairs without interference from other organizations.

J. G. Beard said that he appreciated the feelings of Dr. Wood, but he thought the spirit of this resolution could not be objected to, however much the letter of it might be open to criticism. He was certain Mr. Lakey simply wanted to express to the medical profession the thought that we would like more of the pharmacological work in the under-graduate curriculum.

J. H. Beal asked whether it was in order to adopt the resolution which, in his opinion, expressed that which had been repeated many times in the pages of the medical journals. He was of the opinion that practitioners of medicine know and admit that the instruction of the young physician in therapeutics to-day is distressingly deficient. He thought that the resolution was a good one and that it should be adopted.

<sup>1</sup> The resolution as adopted reads:

Be it resolved that a Committee be appointed from the AMERICAN PHARMACEUTICAL ASSOCIATION to confer with the Committee on Curriculum of the American Medical Association with the view of discussing the wisdom of expanding the medical curriculum as it relates to the teaching of pharmacology and therapeutics to under-graduates in medicine.

#### MOTHPROOFING BY MEANS OF CINCHONA ALKALOIDS.

"L. E. Jackson and Helen E. Wassell (*Industrial and Engineering Chemistry*, Vol. 19, No. 10) find that cinchona alkaloids, or their derivatives, are effective for commercial application. Their use as insectifuges has been a subject for industrial research extending over four years and constitutes U. S. Patent 1,615,843 (February 1, 1927). A long list of chemicals were selected for test and only cinchona alkaloids were found to satisfy the criteria of excellence laid down for moth-repellants, *viz.*: (1) Absence of odor. (2) Adherence to treated fiber. (3) Invisibility. (4) Not removable by dusting or brushing. (5) Do not damage fibers. (6) Soluble in cheap organic solvents, such as petroleum naphtha, as well as in water. (7) Non-toxic. (8) Repels moths. (9) Economic cost. The original test, pieces of wool treated with an alcoholic solution of quinidine sulphate, have withstood moth attack under most favorable conditions, including incubation after inoculation with eggs and living larvæ of moths. The cinchona alkaloids attach themselves to the fiber-like dyestuffs, and their moth-proofing characteristics are probably due to a combination of properties, including salt

formation, bitterness, astringency, germicidal action and intestinal irritation.

"Practical tests consisted in treating clothing, rugs and furniture with cinchona alkaloid compounds dissolved in water, dry cleaners' petroleum naphtha, or carbon tetrachloride. Clothes-moths were exterminated and insects did not re-enter treated fabrics. The only safeguard required is after dry cleaning or laundering as this removes the moth-repellant alkaloids, so that re-mothproofing is essential. Brushing, dusting, shaking and such ordinary usage is apparently without effect upon the protection against moths."

#### EXPORT OF EPHEDRA VULGARIS FROM CHINA TO THE UNITED STATES.

A phenomenal increase in the exports of *ephedra vulgaris* from China to the United States is disclosed in reports of Vice Consul A. J. Ward, Tientsin, China. Among the crude drugs declared for export to the United States during the first seven months of 1926 and 1927, figures for *ephedra vulgaris* were 8317 pounds valued at \$741 and 477,218 pounds worth \$53,652, respectively.

Of the 477,218 pounds shown for the first seven months of 1927, more than one-third or 147,582 pounds, value \$15,667, was exported in July.