

WHAT INSTRUCTION OUGHT MEDICAL COLLEGES TO GIVE IN  
PHARMACOLOGY AND THERAPEUTICS?

## B. THE VIEWPOINT OF THE PHARMACIST.\*

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The honor having been conferred upon me to participate in this symposium by presenting the viewpoint of the pharmacist, I proceeded to obtain this information by sending out *questionnaires* to leading pharmacists all over this country, with the request that these blanks be distributed among pharmacists known to be competent to make the desired examination of one hundred prescriptions each. In this manner, I believe, we have obtained reliable information from a considerable number of high-grade pharmacists representing the various sections of this country and all varieties of prescription practice. As might have been foreseen, I obtained quite a variety of reports, which, however, when averaged up in groups of ten, gave strikingly similar results.

Before presenting the report, it might be well to ask ourselves the question, What does the pharmacist know about the kind of instruction that ought to be given in pharmacology? The pharmacist merely sees one of the results of our instruction, and, I am willing to admit, not the most important one; for, of course, prescription writing is not the end and aim of our course. Still, I believe it will be granted that prescription-writing is a good index of the thoroughness of the training given, since it not merely requires an acquaintance with the rules for writing a prescription, as well as with pharmacodynamics and with therapeutics, but also a knowledge of pharmacy and of chemistry. Prescription-writing is the keystone to the whole pharmacotherapeutic arch. It is because prescription-writing presupposes a sound knowledge in these various directions, that medical students, in general, consider it a difficult accomplishment; and, I am afraid, there are even some instructors in pharmacology, who feel themselves on thin ice when confronted with the necessity of writing prescriptions or of criticizing those written by their students. No one who is not thoroughly grounded in pharmacology and in materia medica can feel himself at home in prescription-writing. On the other hand, of course, the best pharmacist is incompetent to prescribe for any case of illness because he lacks the necessary knowledge of pathology, of pharmacodynamics, and of therapeutics. However, I believe it will be admitted that a good pharmacist is competent to express an opinion upon the thoroughness with which pharmacy and materia medica are taught in our medical schools. It was with this idea in mind that I sent out, from the pharmacologic department of the University of Illinois, a question-blank, which is given herewith, together with the average percentages yielded by an examination of 10,000 prescriptions by about 100 pharmacists in various sections of this country.

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## REPORT ON THE EXAMINATION OF 10,000 CONSECUTIVE PRESCRIPTIONS.

a.	Written in English.....	36
b.	Use of poor Latin.....	18
c.	Almost illegible.....	4
d.	Use of metric system.....	a small percentage
e.	Number of ingredients.....	
	1. Less than three.....	46
	2. More than five.....	11
f.	Proprietaries.....	24
g.	Specified preparations.....	11
h.	Incompatibilities.....	2
i.	Over-doses and errors.....	1
j.	Has the quality of prescription-writing improved or deteriorated within the last ten years?.....	Improvement reported by 55 <i>per cent.</i> In what respects?.....More U. S. P. and N. F. preparations used. Deterioration reported by 20 <i>per cent.</i> .....
k.	Other remarks.....	"Doctors have an insufficient knowledge of pharmacy and prescription-writing" reported by quite a number.....

The first point shown by this investigation is that over one-third of all prescriptions are written in English; and that almost one-fifth are written in poor Latin. In view of the fact that, no doubt, all medical students are taught to write prescriptions in Latin, it is evidently a rather poor result that less than one-half of the prescriptions written are in correct form. We note from the report that four *per cent.* of the prescriptions are "almost illegible." Of course, there is no excuse for any of them being written so poorly; but, in view of the popular idea regarding the bad chirography of physicians in prescription-writing, and the jokes leveled at the medical profession on account of this, the showing seems to me remarkably good. I am wondering, however, whether four *per cent.* of the checks on banks, written by physicians, would be reported upon as almost illegible.

The metric system is not yet used to any extent in this country. This is unfortunate. The existence of the two systems of weights and measures side by side is surely an abomination. The use of one or the other must be discontinued; and the sooner this is done the better. Now which one shall it be? Science says the metric system is the only one fit to survive; it is chiefly the force of inertia that maintains the other. The medical students in the majority of our schools are embarrassed by being taught prescription-writing in the metric system in their courses in pharmacology, and by finding their clinical teachers in the practice of medicine and in the specialties still using the old system. Would it not be possible for our revered old medical teachers to adopt the new system, even at the expense of some exertion and vexation on their part, in order to spare the host of those entering the profession the difficulty and annoyance of learning both systems, and possibly mastering neither? I believe resolutions are in order among all the faculties of our medical schools, that henceforth only one system of weights and measures shall be used by all the members of the faculty and that this system shall be the metric system. I am wondering whether this great and powerful national body could do something to save our students the necessity of learning the use of two systems of weights and measures.

Poly-pharmacy is defined as the prescribing of too many medicines, especially

in one prescription. Surely more than five is too many. Our report shows that poly-pharmacy is still practiced to the extent of eleven *per cent.* On the other hand, we ought to congratulate ourselves upon the fact that almost one-half of all prescriptions written are comparatively simple in composition, containing less than three ingredients.

We now come to perhaps the most significant portion of the report, namely, the extent to which proprietary medicines are prescribed. While I am not narrow enough to believe that proprietary medicines should never be prescribed, surely twenty-four *per cent.*, the figure shown in the report, is too high to represent a desirable condition. It is somewhat of a disappointment after all that has been said and written against the use of proprietary medicines, to discover that one prescription out of every four still calls for proprietaries. I find that pharmacists, in general, base their reply to the question whether prescription writing has improved or deteriorated, upon their experience in the use of proprietaries. Bearing in mind that most of these reports come from pharmacists, who have been prominent in the so-called "U. S. P. and N. F. Propaganda," and who, probably, have concentrated their propaganda upon the physicians whose prescriptions they receive, the figure in the report is probably too low to represent the condition existing in general. Proprietary medicines, I take it, owe their existence to a combination of factors, none of which is of credit to either medicine or pharmacy. No one will dispute the conclusion that, if pharmacology, using the term in the widest sense, were properly taught, the use of proprietary medicines would reach a very much lower percentage. It is unfortunate, by the way, that no better agreement exists on the meaning of the term pharmacology. The proper definition is the one accepted by the Chairman of this meeting, namely, that it includes the study of *all* that is known about drugs; and not merely the study of the action of drugs upon living forms, as it is defined by some. For this portion of pharmacology the term pharmacodynamics should be used. It is instruction in pharmacology in the narrow sense, instead of in the wider sense, that is responsible for the helplessness on the part of the graduates of some of our best schools, when it comes to prescription-writing.

The use of specified preparations denotes a lack of confidence in the pharmacist on the part of the prescribing physician. I am glad to note that it does not exceed eleven *per cent.*

That incompatibilities do not exceed two *per cent.* is perhaps somewhat gratifying. Though over-doses and errors do not exceed one *per cent.*, that number even is too great, considering the seriousness of the possible issue. It shows the advantage of the services of the pharmacist in safeguarding us and our patients against errors.

On the question whether prescription-writing has improved or deteriorated, my correspondents are divided. About fifty-five *per cent.* report improvement, mostly in respect to the prescribing of fewer proprietary medicines. Twenty *per cent.* report deterioration, and the balance of my correspondents do not commit themselves on this point. Quite a number, however, note, under "other remarks" that doctors have an insufficient knowledge of pharmacy and prescription writing. That this is quite a general opinion on the part of pharmacists may be judged from several papers that have been written on this subject within the

last year. I may mention R. H. Needham's paper on "Do Physicians Understand the Fundamentals of Prescription Writing?" presented before the Nashville meeting of the American Pharmaceutical Association in 1913, in which he arrived at a negative conclusion. I would also like to call your attention to a paper by L. E. Sayre, on "Materia Medica in Medical Colleges," published February, 1914, in the *Journal of the American Pharmaceutical Association*, in which he points out that this teaching is deficient.

After all, however, pharmacists do not see our worst failures in the teaching of prescription-writing. I am convinced that a certain proportion of our graduates, on entering practice and finding themselves incompetent to write prescriptions, solve their problem by not writing prescriptions at all, dispensing their own remedies, with all the evil results of such practice.

Summing up our findings, it becomes evident that there is need for considerable improvement in prescription-writing. This could be secured if it were realized that prescription-writing cannot be taught by lecturing or by demonstrations; that the students must be drilled in prescribing. I believe that the best results can be obtained, if a course on pharmacy and prescription-writing be given before the work in pharmacology is taken up. The students should be made familiar, in this course, with the various classes of pharmaceutic preparations and their prescribing. Then, when the student enters his course in pharmacology he is ready to write prescriptions from the very beginning; and he ought to be required to write prescriptions for each of the important drugs as they are studied, paying special attention to methods of pleasant and efficient administration. When the student finally advances to the study of therapeutics he should be required to write prescriptions from the standpoint of the effect. Finally, if the clinical instructors would do their duty and require the students to write prescriptions for the remedies needed by the patients treated in the hospital and in the dispensary, our students would leave our medical colleges well trained in prescribing.

There are two ways in which state medical examining boards could bring about improvement in prescription-writing. First, by restricting their examinations to the "List of Useful Drugs," published by the American Medical Association, or, if this list does not suit them, to any other list they may choose, and by publishing this list so that teachers in this branch may be able to concentrate their students' energies upon the really useful and important drugs. With the limited time at our command, we can only do one of two things, either give our students a superficial and therefore useless knowledge of a large number of drugs, or, a thorough acquaintance with a relatively small number. Surely the latter would be much the more profitable course; this we would pursue, if the state boards would help us by giving us a list of drugs to which they would confine the examinations. Secondly, by requiring candidates to write actual prescriptions in the examinations. This would serve as a wonderful stimulus to teachers and students alike to perfect themselves in the art.