

bitten by a dog used to eat the hair of a dog. A person stung by an adder was advised to kill the animal, or else to fry the adder and strike the place bitten with the hot flesh, or else to make an ointment from its liver and apply it locally. A cure for the scorpion's bite may be conjectured from the following verses:

'Tis true a scorpion's oil is said
To cure the wounds the vermin made.¹

What more likely, then, than that the figure of the centipede branded into the flesh should afford an enduring protection against the bite of that poisonous creature, which infests the houses of India, and that the other figures, whatever they represent, should act as exterminators of their kind in the same way?

To cut this paper short, then, which, on such a subject, might be prolonged to any length—may we not still keep these seals in our showcase as suitably illustrative of the earliest pharmaceuticals and the forerunners of all departments of a modern drug store?—the centipede and other insect figures, to represent vermin exterminators, roach salts, etc.; the pentacle and conch shell, baby's rattle and other sundries; the magic square and inscribed charm, the worthy, or unworthy ancestors of the prescription department? Even the cosmetics and face powders will be represented, if we consider the use to which the stamps are put as regards decoration, which reminds me to say that it is believed that all decoration originated in fear, and was considered prophylactic before it was regarded as purely ornamental.

Allow me a final note—in admonition to the trade:

Do not let the "consumers" of your communities know how easily they could cut down the H. C. L., not only by wearing their old clothes another two years, but by adopting such primitive pharmaceuticals as are still cultivated by a goodly portion of the population of India—that great and mysterious country, so authoritative among Westerners for its efficiency in occultism.

THE NEXT STEP IN PHARMACEUTICAL EDUCATION.*

BY R. A. LYMAN.

On September 1, 1923, all schools of pharmacy holding membership in the American Conference of Pharmaceutical Faculties have agreed to advance their entrance requirements to a four-year high school course. The National Association of Boards of Pharmacy have also fixed that date as the one on which they will require a four-year high school course as a prerequisite for taking a board examination. Credit is also due to the latter association for having recommended this date several years earlier than that finally chosen by the Conference. The Boards also deserve the highest praise of all true friends of pharmacy for having at their last meeting passed resolutions fixing definite dates in the near future when they will require, in addition to the high school requirements, registration in and completion of a two-year course in pharmacy as a prerequisite to an examination for the practice of pharmacy. It is hardly necessary to say that practi-

¹ Max Kahn, "Vulgar Specifics and Therapeutic Superstitions," *Pop. Sci. Monthly*, 1913.

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cally all of the state universities have already gone to the four-year high school requirements and some of the private schools have done likewise, or have served notice that they intend to do so before the final date set by the Conference. It is to be hoped that all institutions will decide to go to a four-year high school basis before 1923.

These changes in educational requirements have been declared by some to be too rapid and visionary but compared to advances made in professional lines other than pharmacy, they are slow. Be that as it may, these advanced requirements indicate that pharmacists are waking up to the fact that in order to save professional pharmacy we have got to move rapidly. Pharmacy seems to have been the last profession to realize that its function is to render a special service to society and that special service is not to supply a lot of cheap help to merchants. Neither is it to keep alive a lot of schools operated for commercial reasons.

Now that the four-year high school requirement is about to become effective, the pertinent question has been asked, "What is to be the next step in pharmaceutical education?"

I have noticed a tendency in the Conference, on the part of some of its members, to rest on their oars for a time after the putting into effect of each higher requirement. This has been so when the effort made was such a simple thing as increasing the requirement by one high school year. Certainly no one who has a real interest in professional, scientific, or even commercial pharmacy, will argue that this is the time for us to be indifferent toward pushing the requirements of pharmaceutical practice to a higher plane. None of the related professions are now oar-resting in this respect. And unless pharmaceutical requirements are advanced much more rapidly in the next few years than they have been in the past, pharmacy will continue to trail at the tail of the other professions—picking up the odds and ends that the other professions have overlooked or cast aside as unfruitful. Pharmacists will still be looking for something "professional" to do. The brains of the student body of America will continue to enter other fields of activity where there is something worth while to do. Only the brainless—those who are content to hang around a drug store for three or four years, washing bottles, scrubbing floors, polishing soda fountains, will constitute the student body, pharmaceutical. A fine prospect!

The war did one thing for pharmacy. It showed us just where pharmacy stands in the family of the learned professions. In order to qualify as a S. A. T. C. school it was necessary that a four-year high school course be the standard for entrance. On many occasions during the war and since, we have been told that the reason why pharmacy did not receive proper recognition was because of the inadequate educational requirements. While some were inclined during the war to maintain that the plight in which pharmacy found itself was due to politics, it is a significant fact that since that time many of those who maintained that attitude have devoted their attention to the advancing of educational standards. Furthermore this progressive attitude is reflected throughout the country in recent legislation, which in almost every instance has tended toward the advancing of educational requirements.

I shall attempt to answer only briefly the question as to what our next step

should be beyond the four-year high school requirement. There are certain steps which seem to me to be necessary in order that pharmacy may keep pace with the related profession. We may differ as to the best methods of bringing about the desired results but as to the necessity of making certain changes, I think there can be no question. Again, in making the following suggestions I have in mind only the question of placing pharmacy on a par with the other professions and am not concerned with the producing of cheap help for employers or the prolonging of the life of any school within or without the Conference. On many previous occasions I have stated that professional pharmacy would be benefited if cheap help was unobtainable and if many of the schools now in existence should die. I have found nothing in the course of events to change that opinion.

I. Now that we have fixed the date for the four-year high school requirement to become effective, I believe the next important step is to eliminate our short courses in pharmacy. Certainly everyone will agree that a scientific pharmacist cannot be trained in two years. No one could be made to believe that an expert chemist could be made in two years. Four years are only sufficient to ground the student in the fundamental principles of chemistry and the sciences related to it. If a chemist cannot be made in two years how can a pharmacist be properly trained in that time? His work must cover a much wider field. Every one who has any vision of the future of pharmacy will say that a pharmacist cannot be properly trained in less than four years. The large manufacturers of medicinal products have a contempt for the average pharmacy college graduate, and why? Because the average college graduate has not had enough training to enable him to do anything. This can only lead the manufacturers to have contempt for the average college of pharmacy. I believe that no one values a well-trained man more than the big manufacturer. He is looking for the well-trained man, not the cheap man. He wants the man that can do things and is willing to pay almost any price for such a man. The time has come when a four-year high school course and a four-year technical college course should be the minimum educational requirement for any profession.

II. A matter of equal importance is that of apprenticeship. The present system of drug store apprenticeship is an abomination to the progress of pharmacy. I am not discussing the value of the apprenticeship system of a quarter of a century ago. It was an entirely different matter then, but it has served its purpose. No intelligent boy is going to hang around a drug store for a period of three or four years where he has about as much opportunity to learn pharmaceutical science or the conduct of a pharmaceutical business as he would if he were a boot-black in a barber shop. The fact that a boy is content to stay in a drug store for so long a time when there are such opportunities in other lines of work, is a sure sign of deficient mentality or lack of ambition. Yet he represents the material we must draw upon to build a profession. I am frank to admit that a two-year college course is much too long to spend upon a boy who has such an outlook upon the opportunities of life in this age of great opportunity. I have, through the pages of the *Druggist Circular*, upon a previous occasion, stated that this apprenticeship system is the factor which is responsible for turning

away from pharmacy those young men with brains which we must keep if pharmacy is to live. I can only repeat this now with emphasis.

The tendency in recent legislation seems to be to solve this problem. The States which have recently enacted new pharmacy laws permit graduates of a four-year course in pharmacy to register without so-called "store experience." If we are going to require "store experience" let us work out a system where we may have a year of intensive, practical experience after the school training is completed. Such a year might correspond to the year of hospital internship now being required by some medical schools. But let it be a scheme which will give to the student a real training in the practical application of his professional work. The object of such an internship must be to make the student a more efficient pharmacist rather than to give the proprietor a cheap man for one year.

III. Another important step in education which should come soon is a classification of the colleges of pharmacy and the establishing of standards for these colleges; their methods of instruction and their teaching faculties. I am told by an officer high in authority in the government service, that the chief reason why pharmacy received so little attention during the war was because of the low educational standards maintained by the schools located in certain eastern states. If this is so these colleges have a serious responsibility to bear. The matter of qualifications for teaching in colleges of pharmacy is a problem which has frequently been brought before the Conference. And always very pleasantly and happily dismissed. It is a fact that in the case of many Conference schools there are men holding positions upon their faculties who have no academic qualifications and who would not be permitted, because of this fact, to hold a position upon the faculty of any other college of the university. In other words, these men lack that breadth of training which is a most necessary factor in any modern educational institution. A teacher of pharmacy to-day must have a horizon that is not limited by the four walls and ceiling of a drug store. Only men of broad training and wide interest can place pharmacy in a commanding position. There are too many men posing as educators who are of the drug store calibre. The institutions having men of this type should see to it that they are replaced as early as possible by men properly trained.

IV. The introducing of modern methods of teaching pharmacy should be one of our chief concerns. Of course these methods will come with the employment of a different type of men. I know of some Conference schools which still teach dosage by having the class repeat doses in concert. Pharmacognosy is taught by passing a dozen containers filled with crude drugs about the class room. The first time around the name is attached; after that the student must know or find out the contents of the container without a label. Such methods could hardly be called pedagogically scientific. Neither do they give the student any training. They do not lead him to think and can only tend to belittle the whole science of pharmacy in his opinion.

V. One of the most serious problems that faces pharmacy is the lack of pharmaceutical literature, both journals and textbooks, and especially the latter. When one looks over the pharmaceutical texts now published and compares them with texts published in other lines, the comparison is painful. Some of the recently published texts are a disgrace to the profession—all the more so because

the individuals writing them are capable of producing something better. Someone has said that the quality of the textbooks published is a fair indication of the development of a science. The condition is such in pharmacy that we ought to encourage in every possible way the writing and publication of texts by those who are, by training and experience, best qualified to do so. It is unfortunate that some of our best men who are highly qualified to write scientific books along their respective lines cannot confine themselves to their own special fields and thus produce scientific books of real value. We are not in need of a series of compilations of the United States Pharmacopoeia and all other departments of human knowledge. But we do need scientifically accurate books representing the various phases of pharmaceutical science. If I may be permitted a reference, in order to illustrate, I would mention the "Art of Compounding" by Scoville. Such a work is a credit to that branch of the science which it represents and to the author who wrote it.

VI. Finally as a part of our immediate educational program, pharmaceutical educators must stand for what is scientifically correct. The fact that a series of manipulations designated as "Homeopathic Pharmacy" exists, and has a large following, is no reason why we should teach this so-called Homeopathic Pharmacy in our schools. I have made a statement in another paper to be published soon, that pharmacy, in order to amount to something, must stand for something. There is no justifiable reason, other than commercial, for pharmacy to cater to every fad. In fact, I believe we lose even in a commercial way by so doing.

I believe it is a mistake to continue the National Formulary with its present policy. It is a collection of discarded drugs, therapeutically incorrect formulas, and substitutes for alcoholic beverages. It represents to a large degree the poly-pharmacy of former ages and is the garbage can of the Pharmacopoeia. Yet it is owned by the national association that is supposed to stand for the best in scientific pharmacy. I am thinking just now of the N. F. as an educational factor and I cannot see how the N. F. can be a factor in giving scientific standing to pharmacy. I believe its policy can be so changed that it will become a real factor for the advancement of scientific pharmacy and a credit to the pharmaceutical profession.

In this period of world reconstruction we have resting upon us the responsibility of reconstructing pharmacy. If it is not done at once by making the requirements for the practice of pharmacy comparable to those of the related professions it will be difficult to ever bring it about. It is difficult to discuss these matters frankly without seeming to speak harshly. If we are to attain the professional ideal which we seek, we must lay aside all personal feelings and ambitions and say and do the thing we believe necessary to say and do in order to consummate that ideal.