consult a physician. Soon after I was summoned to the telephone and asked by a well-known surgeon for the name of "those black capsules that come in a flat box." In due time I was requested to fill the prescription, and although the capsules were taken out of their container and placed in an ordinary pill box, yet the patient recognized the familiar remedy at a glance and in no complimentary manner commented on the time and money wasted in consulting the physician.

Imagine the frame of mind of the patient who, having consulted his physician and paid his fee, learns that his prescription calls for orangeine or antikamnia, with which the daily press has made him familiar.

What do you suppose he will do when next he has neuralgic pain or any other pain; or if his sister or his brother or his aunt has any kind of pain?

But you say: "We do not prescribe remedies advertised in the lay papers. Yes, but how did Fellow's syrup, or worse still, McMunn's elixir, become a "patent medicine?" Because they were prescribed by physicians, who thus assumed the rôle of "advance agents." Rest assured that whenever a physician prescribes any of these remedies with nice, smooth, catchy names, no matter how illegible his writing, and even though he does not follow the advice of the promoters to direct that they be dispensed in original containers, with the "name blown in the bottle," patients will, sooner or later, learn what they are taking. If the remedy has the desired effect and cures this or that trouble the patient when next indisposed will purchase his medicine direct and dispense with the physician's services. Furthermore, he will recommend it to his friends, using the physician's name as a guarantee of its virtues. Next its advertisements will be transferred from the medical journals to the daily press and the physician will have officiated at the birth of another so-called "patent medicine."

A practice still more reprehensible, it seems to me, is that of supplying patients with "physicians' samples." Seeing that his physician tries on him remedies about which he plainly knows nothing, it is small wonder if in the future the patient will prefer to consult the "patent-medicine" literature of the daily paper or will study the placards on fence posts and in street cars to find some remedy fitted to cure him, since to him it must seem that his physicians did this when last consulted.

THE PROBLEM OF THE SYNTHETIC CHEMICAL COMPOUND.*

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In the attention given recently in the medical and lay press to the manufacture of drugs and medicines, interest has centered naturally in two classes of manufacturers; on the one hand those who appeal directly to the ignorance or the vices of the public to buy their patent medicines and nostrums, on the other hand, those manufacturers who, under the ethical mantle of dealing only with the medical profession, have been palming off on it under false names and titles mixtures as bad as any produced by the first class. There is a third most important class of manufacturers requiring serious consideration, the manufacturers of the legitimate, so-called synthetic chemical compounds which are being so largely exploited in medicine. The most serious problem confronting us arises from the enormous increase in the numbers of such compounds. We may well ask our-

selves: Why are there so many new synthetics? Have they any legitimate reason for existing? What safeguards if any need the medical profession insist on in dealing with these products of legitimate houses?

The source of the rapid increase in the number of these preparations lies undoubtedly primarily in the competition for trade, in the desire for gain. The phenomenal commercial success of such synthetics as antipyrin, phenacetin, saccharin, etc., stimulated enormously the search for similar treasure-bringing discoveries, both in commercial and in university laboratories. At the same time the great commercial houses understand very well that for real and continued success they must offer preparations of real, intrinsic medical value, and to secure these they have been compelled to make science their handmaiden, and to go at the commercial problem through scientific experimentation. In this way, they undoubtedly are doing a service to humanity as well as to themselves.

Speaking as a chemist, there is a legitimate, ideal goal toward which this branch of science has a right to strive; we have every reason to believe that with patient work we can improve vastly on the valuable alkaloids and similar compounds offered us by Nature. With out ability to establish the complex structure of these organic molecules, to modify practically at will any detail or part of the molecule, to create, synthetically, any new forms we wish to have—a systematic study of the physiologic effect of every characteristic part of such compounds ought to lead ultimately to a rational and systematic theory and practice of the effect of synthetics in medicine. The great work of Fischer on the vital relations between the configurations of the sugar molecules and their ability to ferment and support life shows us the goal is not an impossible one. It is true that we have made comparatively little progress toward this goal—chemists have given to the medical profession a number of more or less valuable febrifuges, some hypnotics, they have modified some alkaloids, given the profession homatropin as an occasional useful substitute for atropin, hydrastinin as a scientifically evolved improvement on hydrastin, and a few more advanced preparations, but their successes have been on the whole very few and this would be discouraging if history did not teach a lesson of patience. I think I can make my point clearest by referring to the parallel case of the anilin dyes. Chemistry has succeeded in wresting from Nature the supremacy in the preparation of these dyes, we can make at will more beautiful, more lasting, more washable colors of every conceivable shade than Nature has produced, and this has been accomplished through the slow, careful mastery of scientific principles and details, discovered through a great many original investigators. And yet, it took our greatest organic chemist, Professor Baeyer, fourteen years to determine exactly the nature of indigo, and it took about fourteen more years to develop methods for the successful manufacture of this one compound.

That one fact ought to teach us patience in our progress toward the goal of medical chemistry. The problem here is a far more complex one and a far more important one, but we do not see why it should not lead ultimately even to the chemical preparation of those specific antitoxins which we must now draw from animals. We are far from our goal, but the feverish competitions of great houses and university investigators form the hotbed in which the germs of success must ultimately grow.

This brings us to the main point of my remarks: In the evolution of the dye industry bad dyes were often

* Read in a symposium on Proprietary Medicines and Nostrums before the Chicago Medical Society.

thrown on the market, dyes that faded quickly, that would not wash, that we would now consider ugly; the cost of experience in this case was borne by the pocket-books, perhaps by the tempers of the people. In the manufacture of synthetics, however, it is far more difficult to separate the good from the bad, and experience obtained at the expense of the one life, the one health of individuals, is too costly, and physicians do well to hesitate before this array of new synthetics. The manufacturers are interested parties—as they were in unloading bad dyes—many so-called investigations and write-ups under unknown names are as likely to be the bait in the trap. What are physicians to do? Shall they seek safety in standing still, or hesitate to take a forward step from fear it might prove a backward one? The only scientific solution of the problem as it seems to me would lie in the establishment of some institutions, perhaps international, for the impartial testing of promising new synthetics; or in default of such, in the formation of central bureaus of critical disinterested review.

The need of a check even on our great houses was brought home forcibly to my mind in some recent examinations I had occasion to make as a member of the Council on Pharmacy and Chemistry of the A. M. A.: a preparation from one of our great American houses bore in its literature the truthful statement that it is acetylamidobenzene-trimethylxanthine. I wonder how many physicians recognize that these thirty-five letters spell in simple English acetanilid plus caffeine, a mixture as bad as any of those recently exposed, but coming from a great reputable firm and parading correct chemical synonyms other than those usually employed by physicians. This same firm widely advertises to the profession a certain hypnotic as being much safer than chloral—it bears in its description the statement that it is a compound of chloroethanal with a higher polyatomic alcohol, which is true. To a chemist that spelled at once chloral combined with glycerin—what physician, who would hesitate about prescribing chloral, would not like to use his own judgment as to whether chloral plus glycerin would be any safer? It seems to me, then, that physicians ought to insist that all chemical compounds whatever should pass before some reviewing board which will insist that the manufacturers give the plain truth, the whole truth and nothing but the truth!

THE RESPONSIBILITY OF THE MEDICAL TEACHER FOR EXISTING CONDITIONS.*

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THE TEACHER'S INFLUENCE.

The question of the influence of the medical teacher in the prescribing of nostrums goes hand in hand with the question as to how great an influence the medical teacher exerts on the student after he has graduated.

It may be said that the young practitioner is, in all essential details, an epitome of the ideas of his teachers. The more capable the practitioner, the greater his opportunities for practice and observation, the more extensive his reading, the more quickly does he become emancipated from this influence. After all, this is but natural and right. In the early days of practice, of what else should the tyro think when face to face with

a difficult case, but of the teachings of his college days?

Just at this point it is essential that we emphasize something which is only too commonly lost sight of. The student of arts and letters, or the humanities in general, goes to an institution of learning essentially for the purpose of acquiring the methods which pertain to the investigation of his subject. It is of no sort of importance to him that he be familiar with any given detail. He is dealing rather with principles and generalities. He might be ranked as a very fair classical scholar and yet be totally unable to read at sight a given selection from a well-known classical author. It is all-important to the student of political economy that he know the method of that science, but it is by no means essential that he be familiar with any given set of statistics. These are in his books, to which he always has time to refer for the desired information.

PRACTICAL DEMANDS OF THE PROFESSION.

With the medical student the situation is vastly different. Not only must he thoroughly comprehend the methods of medicine, and be able to understand and apply the great fundamental principles, but in addition he must master the minutest detail of practice. It is by no means sufficient, to put the matter more concretely, that he have only a general knowledge of asepsis, but he must be able to put into instant practice all the minutiae of rendering a room, a patient, an instrument aseptic. He may understand very well the general principles of the action of digitalis on the heart, or of iron on the blood composition, and yet practically be a complete failure unless he have at his fingers' ends the precise dose, mode of administration, and clinical effects of both. The medical student, therefore, must learn methods, *plus* the details of putting these methods into practice.

The physician differs again from most of his brethren in other professions, in that his knowledge must be so co-ordinated and correlated as to be available for instant use, without reference to any authority. Now, the application of these facts to the question at issue is tolerably plain. The thoughtful teacher recognizes that the principles of the art and science of medicine must come first. They are the *sine qua non* for the successful understanding of any given medical topic. The surgeon very properly takes up, first, the problems of general surgical pathology. These once mastered, he may proceed to the details of practice. The professor of practice or of materia medica treats of the general action of drugs, and, when these are thoroughly understood, proceeds to the application of the knowledge acquired, by discussing their use in a given case. When one reflects on the enormously overcrowded medical curriculum of today, when every teacher on the faculty is clamoring for more hours for his especial subject, it is easy to understand that some things must suffer, and therapeutics is too frequently the one affected.

How is it with the clinical side of instruction? The professor of practice presents a given medical case, discussing in full its etiology, pathology and diagnosis. And then how about the treatment? In the main this is dismissed with a short reference to the general principles involved. Let us assume the case has been one of influenza. The student may be told that in addition to the ordinary precautions to be taken in any infection, the treatment should be supporting, with cautious use of the antipyretics, and stimulation when necessary. The trained clinician knows precisely what such general directions mean, the student has a very hazy and im-

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