The Journal of the American Medical Association

Published under the Auspices of the Board of Trustees.

VOLUME LI

CHICAGO, ILLINOIS, DECEMBER 12, 1908

NUMBER 24

Original Articles

THE PHARMACOPEIA AS THE STANDARD FOR MEDICAL PRESCRIBING.*

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I was requested to discuss a subject which has been much agitated of late, namely, "The United States Pharmacopeia and National Formulary as Text-books in Medical Schools." Taking the title "text-books" literally, my answer would be a very brief negative, for the strictly technical reason that the functions of a reference book and of a text-book are to a certain degree incompatible. The Pharmacopeia must be a book of reference, and can yield this function to no other. I will refer only to the matter of the alphabetic arrangement, which is so eminently impractical in a text-book; but there are many other points which are even more important.

After all, however, the question which really interests the profession is not whether these books should be studied in the original text and binding, but rather, whether they can and should serve as the main or exclusive basis of instruction in materia medica. If so, the manner in which they are presented to the student may safely be left to the judgment of the trained teachers of the subject. Looking at the matter in this way, it assumes a much broader aspect; for the question of the adequacy of the official drugs in medical instruction is identical with the question of their adequacy in medical practice. I have, therefore, preferred to alter the title of my paper so as to indicate the larger scope.

INTEREST IN OFFICIAL DRUGS.

The last few years have seen a most remarkable revival of interest in the official drugs and preparations. The cry "back to the Pharmacopeia" has gone through the land. The Pharmacopeia has been lauded here and there as the panacea for all therapeutic ills. To talk and write about "official prescribing" has become the fashion. Is it a mere fashion? Or does it represent a real sentiment, based on conviction, and in final analysis, on facts? Let us examine into the matter. What is behind this movement? What does the Pharmacopeia mean to us? Is it a mere fetish, whose adoration will affect our purification by some mysterious emanation? Or does it stand for definite ideas and ideals? If so, are they worthy, and are they in fact realized

by the Pharmacopeia? These questions must be answered, and in no uncertain manner, before we can afford to give our whole-hearted and unreserved support to this pharmacopeial movement. If we find that the answers are but partly satisfactory, then our support should only be partial, and our main energies should be devoted, not so much to the exploitation of the pharmacopeia as it is, but to making it what it should be.

The inquiry has already begun, in the most practical manner, that of the stern logic of facts. Many men who a few years ago prescribed secret remedies are now turning with the best resolutions to the Pharmacopeia and to the National Formulary to see what these hold for them. These books are being subjected to a test much more severe than that to which they were recently subjected by the Food and Drugs Act. They will have to answer the question, in a practical way, whether they are indeed representative of the medicine of the day—not of a hundred years ago, nor of ten years ago, nor of ten years hence—but of to-day: not of medicine as practiced by the herb-woman, or by the "registered-through-years-of-practice," or by the novelty hunter, but medicine as it is practiced by the intelligent, fairly trained, conservative-progressive practitioner, who represents the average practical ideals of the profession. For, after all, the real object of those who strive for reform is not pharmacopeial prescribing, but scientific prescribing; the use of scientific non-secret remedies, such as the Pharmacopeia is supposed to contain. Whether or not the Pharmacopeia is to be the means of this reform depends entirely on the extent to which it meets these ideals.

VALUE OF THE PHARMACOPEIA TO THE PHYSICIAN.

The usefulness of the Pharmacopeia to the physician is coincident with the usefulness of the remedies which it contains. What most concerns the physician is the selection of the substances which are admitted into the Pharmacopeia. To attain its object so far as the medical profession is concerned, it must in the first place contain the substances which the physicians wish to use. It may be put down as an axiom that the practitioner who does not use the remedy which is best for his patient is not doing his duty. If that remedy is not in the Pharmacopeia, so much the worse for the Pharmacopeia.

In the second place, however, to fully reach its ideals, the Pharmacopeia should be, to a certain extent, educative—it should not be the dump heap of a miscellaneous collection of remedies, good, bad and indifferent, which happen to please the passing fancy of the year of its publication. On the contrary, it should aim to contain only remedies of demonstrated value and superiority. In this way it may guide and lead the practitioner, who will come to it with some confidence that in using

* Read in the Section on Pharmacology and Therapeutics of the American Medical Association, at the Fifty-ninth Annual Session, held at Chicago, June, 1908.

Pharmacopeial remedies he is indeed using something of value.

This, then, is the test to which the Pharmacopeia is being subjected. It is not necessary to await the outcome, the general results can be foretold, and to a considerable extent forestalled, by timely changes. The truest friends of the Pharmacopeial movement are the first to concede that the present Pharmacopeia can not claim to attain fully these ideals, and that the National Formulary is far from being a perfect guide to scientific prescribing. Setting aside the Formulary for later consideration, let us inquire into those faults of the Pharmacopeia which prevent it from becoming popular with the medical profession. This will necessitate some rather thorough criticism, but I trust that this will be constructive, rather than destructive.

Before entering into this criticism I wish to place myself on record as a sincere admirer of the wonderful amount of reliable information which is collected in this volume, and which makes it one of the most valuable works of its kind. Its defects are caused mainly by the methods used in its preparation; and in the following I wish to suggest to you such plans as will, in my opinion, greatly, if not entirely, eliminate these defects. According to the method of scientific therapeutics, let us inquire into the causes of the deficiencies of the Pharmacopeia and see whether we may not thus arrive at rational remedies.

Why does not the Pharmacopeia of to-day represent more successfully the best of present day therapeutics? Why does it not contain some of the valuable remedies, and why does it contain so much that is obsolete?

The causes seem to me to come under three headings: 1, The principles and methods used in selecting what substances are to be admitted; 2, the veil of secrecy thrown about the proceedings of the revision committee; 3, the long interval elapsing between the revisions.

I shall not aim to point out how these same factors lessen the usefulness of the book as a pharmaceutical standard—this aspect of the question is at least equally important; but, for want of time, I shall confine myself mainly to the medical aspects. From this standpoint, the question of the selection of remedies is at the moment by far the most important; but since it is also the most complex, I shall reserve it for the last.

DISADVANTAGES OF THE PRESENT METHOD OF REVISION.

If I am correctly informed, the present revision committee has aimed to enshroud its deliberations and proceedings with an impenetrable veil of secrecy, so that no one outside of the committee should know what was to go into the Pharmacopeia until the first copy was on sale; and so that no one to this day, three years after the publication, should know what manner of reasoning led to the conclusions which are embodied in this book.

It is one of the most unfortunate results of this very system that we do not even know what prompted its adoption. Presumably it was devised with the object of excluding interference on the part of those who might be financially interested in the decisions. If this was the motive, I would submit that publicity would accomplish the purpose much more successfully than any attempt at secrecy.

On the other hand, this short-sighted policy deprived the committee of the benefits of a public discussion of its contemplated policies. No revision committee can be expected to be perfect and omniscient. Would it not

be advisable to throw its decisions and conclusions open to a general discussion before they become fixed and binding, as at present, for ten years? I am not proposing that all the details of the deliberations of the committee should be published—a committee of this kind is entitled to some decent privacy and quiet; this is indeed essential to all scientific work. But I do contend that its methods and its decisions should be published from time to time, as adopted; and that a reasonable interval be allowed for discussion, criticism and alteration before any decision is made binding.

I am not so sure whether it would be wise to publish the constitution of the various committees, while the work of revision is in progress—but on the whole I think that this would be the wiser policy. At least, there would be no disadvantage and every advantage in publishing the names of those in especial charge of the different portions of the work after the Pharmacopeia is published.

WHAT INTERVAL SHOULD ELAPSE BETWEEN SUCCESSIVE REVISIONS?

As you all know, the Pharmacopeia is revised every ten years. All the improvements and discoveries which are made in the interim must wait for recognition until the next revision. In other words, the Pharmacopeia is generally from one to ten years behind the time. It is superfluous to point out what this means in these days, when the annual output of research in therapeutics, pharmacy and the allied sciences is measured by volumes. Moreover, any errors which have crept into the book; formulas which are found unworkable; standards which actual trial demonstrates as too strict or too lax—all such matters have to stand unrepealed for a decennium.

This has resulted in the anomaly that the supposed authoritative standard was neither the final authority nor the final standard. This deficiency was rendered so conspicuous when Congress enacted the Pharmacopeia as the federal standard, that the present revision committee felt obliged to take the first step in the right direction by issuing lists of "additions and corrections." The necessity for this supplementary revision is made manifest by the fact that within two years these corrections included 431 changes; or 274, if duplicates are excluded. In the words of the chairman of the revision committee:¹ "That the Pharmacopeia should be revised oftener than once in ten years must be apparent to all, and this subject must claim the serious attention of the next Pharmacopeial convention; but, on the other hand, a constant tinkering with the standards should be avoided."

I agree heartily with both clauses of this statement, although I venture to doubt whether any amount of "tinkering" could unsettle conditions more than the long delay which we have witnessed in the issue of the last Pharmacopeia. This, combined with the strict policy of secrecy, operated to the intent that no one knew "where he was at" in matters pharmacopeial, for at least five years. The excessively short time which was granted for the adoption of the new standard served still further to unsettle conditions. This important matter, incidentally, should be adjusted in advance by the convention and not left to the committee or even to the trustees.

1. Amer. Pharm. Assoc. Bull., ii, 365.

To return to the subject, however, there should be no "tinkering," but only such repairs and improvements as the intervening experience has shown to be necessary. On the other hand, whenever the advisability of a change has been demonstrated, it should be made as promptly as possible. I would suggest that the new revision committee publish its conclusions as soon as they are made, monthly if necessary; that a reasonable interval, at least four months, be allowed for general discussion; that once a year, or oftener if necessary, a supplement be issued, printed in such a way as to be readily detached and inserted into the present Pharmacopeia; that each supplement become official four months after its publication. All this before the next regular "revision" is issued; that when the ground has been fairly covered in this manner—be it three, five or seven years—the "revised" edition be published, which would not be anything essentially new, but only a systematized reprint of the old edition and the new supplements. That the same procedure be kept up until the meeting of the next convention, when the committee would terminate its labors by reporting to the convention whatever changes in general policy their experience would suggest. I am convinced that some such changes must be made if the Pharmacopeia is to become the real standard; but these suggestions should only be adopted with a realization of their full meaning.

This whole subject is one of the most important and far-reaching with which the next Pharmacopeial convention will have to deal, for an affirmative vote will mean a radical reorganization of the present method of revision. It will mean that the revision is to be continuous instead of intermittent; that the revision committee will be in active service throughout its entire term of office; it should mean the concentration of the responsibility on those who have the time and ability to render this continuous service and to do the actual work; it should mean the elimination of any whose services are ornamental rather than useful, political rather than technical; it should mean that the ninth revision of the Pharmacopeia would begin to appear and to be official within one or two years after the meeting of the convention; and that it would not be closed until the meeting of the next convention.

ORGANIZATION OF THE REVISION COMMITTEE.

It appears to me that the present revision committee is too large for effective work and for the proper distribution of responsibility. The present method of selecting the members of this committee, without regard to their special qualifications and of subsequently assigning to them special technical subjects, also seems to me poorly adapted to securing the special expert talent which the revision requires. The fact that thus far the revision committee has met the demands on it as well as it has, seems to me rather a fortunate accident. The matter is far too important, however, to be entrusted to accidents. As to the division of the work among the committee, the scheme described by Professor Rice² is admirable in its general scope, although I would suggest the consolidation of several of the subcommittees, for the purpose of centralizing responsibility.

To illustrate the working out of the ideas which I have presented, I would submit to you the following

outline for the appointment and *modus operandi* of the general revision committee.

Membership of the Revision Committee.—The final voting power should be entrusted to a limited "executive committee" consisting of the general chairman and chairman of the nine subcommittees, namely:

1. Admission.
2. Pharmacognosy.
3. Proximate Principles and Assays.
4. Volatile and Fixed Oils.
5. Inorganic Chemicals, Chemical Processes and Reagents.
6. Organic Chemistry (including synthetics).
7. Pharmaceutical Processes and Formulas.
8. Pharmacodynamics (including sera).
9. Therapeutics (including strengths and doses).

With the general chairman, this would give a working (executive) committee of ten members. These chairmen should be elected directly by the pharmacopeial convention. Two nominations for each place should be submitted by the retiring revision committee—one of these two nominations should be that of the present incumbent, if he has performed his services satisfactorily, and is willing to continue. Additional nominations from the house should be called for. The nominations and ballot for each place should be taken up seriatim.

The elected chairman of each subcommittee should appoint such "associates" to his committee as he deems advisable, subject to the approval of the executive committee. The associates of the admission committee, however, should be elected directly by the convention. In case of failure of any member to carry on the work of his committee properly, it should be the duty of the general chairman to report this to the trustees, who, after opportunity of hearing, should relieve him of further service, if they deem this necessary, and elect a successor from nominations made by the executive committee. Vacancies from other causes should be filled in a similar manner.

GENERAL WORKING METHOD.

The admission of an article having been decided by the admission committee—of which I shall have more to say presently—the general chairman should refer the article to the chairman of one of the committees 2 to 8, on whom the responsibility of securing a proper description should rest. The chairman of this subcommittee should then apportion the article among his staff and should obtain what outside aid he needs from the other subcommittees and elsewhere, and render a report to his subcommittee for discussion. After alteration and adoption by this subcommittee, he should transmit his final report to the executive committee for vote. If adopted, the therapeutic committee should affix the dose, and the general chairman should prepare the description for publication, submitting proof to the executive committee and to every member of the subcommittees in which the report originated.

SCOPE OF THE PHARMACOPEIA AND THE ARTICLES ADMITTED.

I have postponed the discussion of this question as long as possible, because it is the most difficult phase of the subject. We will make better progress if we acknowledge at the outset that the question is incapable of a strictly scientific and logical solution; that the

2. Pharm. Era, 1895, xlii, 102.

answer must be a compromise, because the Pharmacopeia itself is a compromise between very diverse interests.

The retail pharmacist, the manufacturer, the unprogressive and the progressive physician, and the pharmacologist—each would make a very different Pharmacopeia. The east and the west and the south would introduce further differences. No one Pharmacopeia which human ingenuity could devise would seem ideal to all of these factions. Admitting then this difficulty, that the Pharmacopeia must be a compromise, it does not, however, follow that it must be a compromise without any plan or system.

As a basis for discussion, I would submit the following definition of the plan and scope of a national Pharmacopeia, viz:

It should aim to enumerate those substances whose medicinal value and superiority are generally conceded and which are generally used in the country; it should aim to furnish such descriptions and indicate such tests as will suffice to establish the identity, strength and medicinal purity of these substances; and it should furnish practical working formulas for such preparations as may be profitably prepared in a well equipped retail pharmacy. It should aim to present this information clearly and conveniently; above all, it should aim at the highest degree of reliability of all its contents. Consequently, it should be slow to accept any statement or opinion. It should breathe a healthy but not excessive conservatism as to new matters, and an equally rigorous criticism and re-examination of old matter.

With this general definition in mind, let us examine what criteria should be applied to the selection of admissions. The extremely conflicting opinions which prevail on this score can, it seems to me, be brought under three headings:

1. The first opinion, particularly prevalent among pharmacists, is that the Pharmacopeia should contain all substances which are sufficiently often used; whether they be good, bad or indifferent; whether they are used by physicians or only by the laity.

2. The second opinion differs from the first only in so far as it would exclude those substances which are not used by physicians, but only by the laity.

3. The third would exclude all substances whose value had not been scientifically demonstrated, regardless of their extensive use.

Personally, I feel convinced that the last is the direction in which progress lies. It is the ideal for which we should strive; the ideal which will enlist the sympathy of the best, and I trust of the largest, portion of both professions. In proportion as it is successfully attained, it will do more to place the popularity of the Pharmacopeia on a solid foundation, among the medical profession, than any pandering to ephemeral fads and fancies, than any concessions to "nine day wonders" of advertising.

In urging you to accept and support this ideal, I do not wish to commit you to any visionary scheme, to any impractical standards. I do not consider the full attainment of this ideal practical, but I do consider the striving for it as eminently practical and useful. An ideal, however worthy, is not in itself the solution of a problem, but it can be of great practical value as a guide in the solution. The compass does not calm the tempest; it does not even steer the mariner across the sea—but it shows him in what direction to steer.

HOW TO DETERMINE WORTH.

If we then accept this ideal, how are we to determine which remedies are truly worthy? There are three different ways open to us:

1. Popular experience as determined by the continued extensive use of the drug.

2. Clinical experience, as represented in the current opinions of clinicians.

3. Laboratory experience, representative of the stricter conditions of control.

Each of these methods is open to obvious fallacies. Mere popularity, as evidenced by extensive use, is no more conclusive evidence of the intrinsic value of a remedy than it is of the intrinsic value of anything else.

The clinical experience would seem the best guide, theoretically. But no one who has watched the ebb and flow of therapeutic practice—the ease, for instance, with which it can be temporarily swayed by skillful advertising—would care to entrust the judgment of therapeutic value to clinical experience alone.

The laboratory investigator, finally, deals more strictly with demonstrable facts; if he is honest and capable, his statements as to these facts may be generally accepted as correct and conclusive. But the honest and capable laboratory investigator is the first to concede the limitations of these facts and to seek their correlation with clinical and popular experience.

I believe that the practical solution of the problem lies in the last direction—in the critical correlation of the three classes of experience. With the present imperfections of therapeutic science, the problems must be approached by every avenue, and not by one to the exclusion of the others. Popularity, or the lack of it; the consensus of clinical opinion; and laboratory results—each of these should be admitted to furnish presumptive evidence for or against the value of a substance, unless they are clearly and definitely contradicted by the others.

If we are agreed on the ideal and on the nature of the evidence required, we must next ask, how is the evidence to be collected and judged? As to the collection of the evidence, the methods must be very different for each of the three classes. The simplest case is in regard to laboratory experience; for the number of professional "pharmacologists" is so limited that their opinions could be readily learned by direct correspondence.

The same method, however, when applied to clinical and popular experience, would only result in confusion. It would be necessary to aim at a representative rather than at a universal expression of opinion. For this the ideal medium exists ready at hand in the local societies, both medical and pharmaceutical.

In practice, then, I would suggest that a check list of the substances and preparations contained in the present Pharmacopeia be sent to the secretary of every local medical and pharmaceutical society, with the request that his society vote which of these articles they consider worthy of retention, in accordance with the ideals laid down; and to indicate any further remedies which they would wish to have added.

If a fair proportion of both professions can be made to see that the Pharmacopeia is, after all, their book, and not the book of the revision committee; if they can be made to feel that their cooperation is really desired and that the request for cooperation is not merely perfunctory; then I feel certain of a sufficient response to

such an inquiry to furnish some statistical basis for judgment. This would be of the highest value, indeed indispensable, for the solution of this question, provided that it is used intelligently and judiciously, with a proper regard for cause as well as effect.

This opens up the final question as to who is to sift and judge this and other evidence and decide on the admissions. At present, I believe this matter is decided by the whole revision committee, each member having an equal voice. Is this method calculated to give the best results? In seeking for an answer we need only consider the fact that most of the members of this committee are supposed to be selected primarily for their expert knowledge of chemistry, pharmacy or pharmacognosy and not for their ability to judge of the medicinal importance of the substances. It undoubtedly happens quite frequently that the knowledge of the one and the ability to judge the other are combined in the same individual; but even so, this is little more than a coincidence; and this matter also is far too important to be left to mere chance.

This is illustrated by the examination of the composition of the revision committee. Every one, I think, will concede that the medical profession should, on the whole, have the larger, if not the exclusive share in deciding what substances are of medicinal importance. Yet of the twenty-six members of present revision committee, only twelve have the title of M.D. and of these only half are identified mainly with medicine. So that the medical profession, instead of having the dominant voice in the decisions, is very decidedly in the minority. This preponderance of pharmacists is indispensable for the technical work of the revision, for this is mainly pharmaceutical. This makes it apparent that these two subjects—the selection of the admissions and the technical matter—can not be handled with equally satisfactory results by the same set of men. The authority and responsibility for the admissions must be vested in a special committee—and the importance of this subject demands that this committee be elected for this specific purpose directly by the convention.

I can see no valid objections to this plan; any members elected to this committee could also be elected to the chairmanship of any of the other subcommittees if this were thought desirable. To secure a good committee, however, the convention should be guided by definite rules as to eligibility. It goes without saying that the members should be of the highest integrity and as free as possible from any affiliations which might cloud their judgment. But it is equally important that they should be able to deal intelligently and thoroughly with the subject, and to this end, that they represent fairly the best sanely progressive and conservative element of both professions.

The exponents of popular, clinical and laboratory experience should all three be represented by retail pharmacists, practicing clinicians and professional pharmacologists. An equal representation appears to me the most desirable, let us say two representatives of each, making a working committee of six. After due consideration and discussion of the statistical and other evidence, an affirmative vote of four should then be required for the admission of an article. As soon as an article has been thus accepted, it would be turned over to the general chairman of the revision committee for technical elaboration, as I have previously outlined.

There is one more matter in connection with admissions where the present policy should be revised—I refer to the admissibility of patented medicines and otherwise protected articles. The policy, dictated by the convention, has been to exclude these from the Pharmacopeia, presumably as a protest against the commercialization of what we would love to see an honored sister-profession, rather than a business. If this was the object of the exclusion it has signally failed in practice—the new inventions are still being given to the suffering public with a monopolistic string attached—free handed, but not free! Much as we may deplore this fact, a fact it remains. To refuse to utilize a therapeutic improvement in this account would be to cut off the patient's nose to spite the promoter's face. And if we use them there is little sense in excluding them from the Pharmacopeia. So long as we prescribe his wares, the promoter cares very little whether we give them official recognition. On the other hand, admit the best of the strictly scientific protected articles of each class to the Pharmacopeia, making exclusively pharmacopeial prescribing a practical possibility instead of a Utopian theory, and you will have made it an object to the promoter to be strictly scientific, by giving him a real advantage over his unscientific competitors.

It may be urged that this is unethical; that it would overload the pharmacopeia; that it would hold out too strong financial inducements. To these objections I would reply that there is no violation of the principles of scientific ethics and that altered circumstances alter practical ethics. Much of the dreaded overloading might be saved, here as elsewhere, by group-headings; and, after all, the number of important "discoveries" which would survive a careful, scientific scrutiny and discounting of any fictitious value of advertising, and of the lure of novelty, is not so large as to excite alarm—at least my service on the Council on Pharmacy and Chemistry of this Association has so impressed me. And it has also impressed me with a healthy optimism as to the probable attitude of such a committee toward outside influences, especially when the responsibility could not be hidden behind secret deliberations or behind a large committee. I may add that this suggestion is not at all revolutionary, for it was publicly advocated by Professor Rice in the admirable paper to which I have already alluded.²

THE NATIONAL FORMULARY.

Until quite recently the National Formulary was a modest, unobtrusive, harmless and really useful little book, compiled by the American Pharmaceutical Association primarily for the benefit of Pharmacists, purposing to give working formulas for such preparations as the pharmacopeial revision committee did not care to father—elixirs, cough syrups, shot-gun prescriptions, etc.—a book in which the tottering great-grandmothers of the materia medica were resurrected from their well-earned sleep in the therapeutic graveyard, to join in a merry dance with the lusty and vociferous youngsters of the modern therapeutic yellow press; with here and there a healthy débutante waiting bashfully for the favorable notice of the revision committee.

Altogether, the spirit of the book adhered pretty closely to the motto: "For those who like this sort of thing, this is just the sort of thing they like." This was the kind of unpretentious, irresponsible but useful existence from which the National Formulary was sud-

denly roused by its federal recognition as a legal standard. It had aimed at nothing higher than to supply a popular demand, uncritically and blindly; and suddenly found itself set up as a leader for this very demand. The position is in many ways highly anomalous. These are problems, however, which do not concern the medical profession and that is my principal reason for pointing them out.

There is no doubt that preparations such as those listed in the National Formulary are used by the profession as well as by the laity; and thus there is a legitimate need for such a book, which it well meets. There should be definite and legalized standards of strength for such preparations, although the working formulas and flavoring of the National Formulary should in practice be made optional with the manufacturer. To this extent the National Formulary deserves encouragement, and if the American Pharmaceutical Association so desires, the American Medical Association could authorize the Council on Pharmacy and Chemistry to act as an advisory committee to whom such questions as doses, the desirable strength of mixtures, or obvious therapeutic incompatibilities might be referred. Further than this, however, we should not go. The medical profession should emphatically decline to share in the responsibility for a book so professedly uncritical as the National Formulary, by its very nature, must be.

In conclusion, I feel very sincerely that I must ask pardon for my presumption in occupying so much time in the discussion of matters in regard to which I am distinctly an outsider. I wish to assure you, however, that I did not undertake the matter lightly, but after much serious thought and hesitation, not because, as Professor Remington has said, "If any man wants a subject for discussion, and one which he can hit with safety, there is always the Pharmacopeia." My motive has been the conviction that all the preaching in the world will not and can not make the Pharmacopeia the practical standard of medical prescribing so long as the revision committee adheres to its present ideals and methods. The ideals and methods which I have laid before you can only be realized by the practical cooperation of the medical profession. In less than two years the pharmacopeial convention meets. If you agree with all or part of what I have said you have a personal duty to discharge, and it was the sense of my own share in this duty which has prompted me to address you on this subject. My personal inclination would have been for almost any other subject.

Experimental Reproduction of Whooping Cough.—W. N. Klimenko reports in the *Centralblatt für Bakteriologie*, Oct. 10, 1908, that he has succeeded in cultivating the Bordet-Gengou bacillus from the catarrhal secretions of children with whooping cough, and with it has reproduced the disease in 48 young dogs and in monkeys, afterward cultivating the bacillus again from the secretions of the animals. It was in 1906 that the Belgians, Bordet and Gengou, announced the discovery of a bipolar bacillus in the first week of pertussis, which they regarded as the causal germ. Klimenko found this same germ in 80 per cent. of 76 children in the first week of whooping cough, while the findings were constantly negative in 50 healthy infants and in patients with other various affections. The period of incubation in the experimental pertussis ranged from two to six days, and the duration of the disease averaged 48 days. Bordet found a specific amboceptor for this bacillus in the serum of children convalescing from pertussis.

THE NEED OF MORE INTIMATE KNOWLEDGE OF THE U. S. PHARMACOPEIA AND THE NATIONAL FORMULARY AMONG PHYSICIANS.*

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There is need of a sober viewing of the question of pharmacy in its relation to medicine. While these two professions are engaged to an extent in different fields of observation and practical work, they have many interests in common, and it is especially in behalf of those higher ethical principles on which real progress depends that joint meetings and free discussions of the natural lines of contact will prove mutually strengthening and result in a real gain to mankind. Indeed, the program of procedure has been already outlined, and men with definite convictions, beliefs, hopes and aspirations for better things, have enlisted in the movement under the general direction of the American Medical and American Pharmaceutical Associations, and it is fitting that this section should have been fixed on as one of the principal centers for the consideration of subjects affecting so vitally the present and future welfare of both medicine and pharmacy.

I realize that the subject which I am about to discuss must be approached carefully and calmly, and also that in emphasizing the importance of the utilization of the U. S. Pharmacopeia and the National Formulary in the practice of medicine, nothing is to be gained by extravagant claims or unreasonable statements. I can only hope (and I believe) that the result of my recent experience and investigations into the question may be of assistance to other practitioners. Admittedly, no member of our profession is deserving of censure who honestly strives to bring to his aid in the treatment of disease all the therapeutic adjuvants at his disposal. He should, however, make thrice certain that he is weaponed with reliable instruments. Such a course would exemplify a proper appreciation and respect for scientific pharmaceuticals. The time has come to recognize the fact that a reform movement among pharmacists is now, and will be as time passes, in progress, working through the American Pharmaceutical Association and its numerous branches. A parallel movement with a view to meeting the requirements of the higher ethical standards and improved conditions generally in the medical profession has been brought about in recent years, chiefly through the efforts of Dr. George H. Simmons, editor of *THE JOURNAL*, Dr. Frank Billings, Dr. McCormack and other individual members of the Association, the work of the Council on Pharmacy and Chemistry, and of the Council on Medical Education of the American Medical Association, and the passage of the federal Food and Drugs Act.

It is safely within the limits of strict justice and truth to remark that legitimate pharmacy has been grossly neglected by the medical profession during the past quarter of a century—a period during which physicians have been depending largely on proprietary preparations and "secret nostrums," and in which there has developed a stolid indifference to ethical obligations. The propa-

* Read in the Section on Pharmacology and Therapeutics of the American Medical Association, at the Fifty-ninth Annual Session, held at Chicago, June, 1908.