lowest priced. We do not distinguish in dose between the three. Yet, it is true that there is a specified demand from some sources for these various commercial kinds of aloes, and perhaps the Pharmacopoeia as a book of standards should continue the differentiation. While it is doubtful whether we can bring out positive points of distinction in external color or color of the powder, size or shape, odor or taste, microscopic appearances, or solubility in water or alcohol, we do have a very definite distinction in the color of the aqueous solution and in the color produced with nitric acid. Despite all of the work that has been done for many years on aloes, it seems that no really satisfactory assay has as yet been devised for determining the percentage of aloin present. Furthermore, according to the literature, there is a wide variation in the percentage of aloin present in the various kinds of aloes, ranging possibly from 4 to 30%. Also, it is true that the full therapeutic value of aloes is not due entirely to the aloin. It would appear as though an excellent opportunity lies in the study of the therapeutic acitivity of aloes compared with its aloin content.

UNIVERSITY OF ILLINOIS
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THE PHARMACEUTICAL MANUFACTURER AND PHARMACOPOEIAL REVISION.*

BY F. F. BERG.

The popular conception of the Pharmacopoeia is that of a book to be found on the shelf of every well-regulated pharmacy, which the pharmacist uses as a guide for the practice of his profession. This conception is entirely proper for such is the purpose which its founders and revisers have intended it to fulfill, but in recent years it has found a place with other professions that are likewise governed by its standards.

Referring to the historical introduction of the present Pharmacopoeia it is possible to trace each revision, and how, through the coöperation of medical and pharmaceutical interests, the volume has changed with each succeeding decade to meet more exacting demands.

It is not within the scope or intent of this paper to comment at length upon the tremendous and marvelous advance made by medical science within the past few years, but may it suffice to say that any authoritative work serving to provide, regulate or standardize medicinal matter is subject to revision in accordance with that which medical science finds to possess therapeutic value, or may be needed as a manufacturing adjunct to the same.

From its earliest form, when it constituted the means of establishing uniformity for the commonly used medicaments of the day for the doctor and pharmacist, its scope has been enlarged to include preparations, compounds and component parts thereof, which are so diversified in form, and subject to such specifications for purity, quality and strength, that it has become necessary to include with the doctor and pharmacist in the revision proceedings the combined knowledge and skill of chemists, biologists, pharmacologists, and teachers, which professions

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may in turn represent diversified interests all of which are concerned or affected by the Pharmacopoeia as the standard by which their products are judged or their manufacturing materials purchased.

The trend of the pharmacist during the recent years and purchasing from manufacturers such standardized products as were formerly prepared in the drug store, have created a condition which has affected revision proceedings in so far as the classes of material which are no longer prepared by the retail pharmacist are concerned. In recognition of this fact, those preparations which are now accepted manufactured commodities, though recognized in the Pharmacopoeia, bear no directions for the preparation of same—this being left to the discretion and ingenuity of the individual manufacturer, so long as the finished products meet standards provided for the same.

The extent to which this procedure has progressed may be gained by reference to U. S. P. IX; on the first 100 pages are found 127 monographs covering botanicals, chemicals and preparations which on further inspection reveal that of these 101 are of the kind now prepared and supplied by several manufacturers, whereas 26 may be classed among those which pharmacists prepare. A further examination of the Pharmacopoeia reveals the presence of several classes or groups of preparations which are prepared entirely by pharmaceutical manufacturers—extracts, fluidextracts, oleoresins, alkaloids, inorganic and organic chemicals, glandular and biologic products, etc.

It is not the intent of the writer to condemn pharmacists for neglecting to keep abreast of the times in supplying the newer materia medica products. The nature of the materials used and the equipment necessary for manufacture and standardization do not lend themselves to installation in the pharmacy, nor is it economical for a pharmacist to prepare and standardize many of these products. It is obvious that it is far better to purchase Tincture of Hyoscyamus than to prepare a 1000-cc portion, which requires 250 cc for its assay and another 250 cc to verify the result, nor is it within the province of the pharmacist to standardize those preparations which require biological technique.

The extent to which pharmaceutical manufacturers are interested in pharmacopoeial revision proceedings may be judged from the foregoing.

By pharmacopoeial revision older forms of medication are either improved or deleted and new therapeutic agents are added to the Pharmacopoeia. Experience gained during each intervening decade in medicine, chemistry, pharmacy and allied sciences largely shapes and directs the work of revision. Through organization, the above-named professions within the individual manufacturing concerns are able to lend assistance to revision proceedings by contributing their combined knowledge to the solution of problems which must be solved, and by submitting accumulated data, which is an important consideration for guidance in improvement and deletion or retention of a given material or product.

The records and data available may be classified as follows:

Analytical Data.—From the records covering botanical and chemical control of materials may be obtained information concerning articles of commerce, and serves as an index to the advisability of recommending changes in the adopted standards or formulating new standards for such materials as it may be desirable to include.

From the records available concerning strength, color, odor and similar prop-

erties, as obtained by chemicals or physiological assay, may be evolved new or improved standards bearing on the above-named criteria which are necessary to maintain uniformity. In addition thereto the constant application of such methods of control has the effect of producing modifications in procedure or equipment whereby greater accuracy may be assured.

Research Data.—Several manufacturers of pharmaceutical products have found it advantageous to the best interest of the profession of medicine to establish research laboratories wherein may be studied problems which have given promise of value in the treatment of disease; the result has been that many of the now staple and specific products or compounds may be pointed out as having originated in the manufacturers' laboratories, and evidence of the value of such development is shown in the list of proposed additions to the forthcoming Pharmacopoeia.

Manufacturing Data.—Experience gained by daily contact with the production of pharmacopoeial preparations shows wherein improvement may be suggested either through the introduction of more efficient equipment or through the use of a different solvent. Manufacturing experience may show depletion of a certain source of raw material and substitution of other materials and, therefore, changes in procedure governing the process and requirements of finished product may be recommended. Legislation, applying to the uses of alcohol for extraction purposes, has affected trade conditions; dealers who formerly used small amounts of alcohol now, with the increased cost and attendant difficulties of obtaining it, have turned to the pharmaceutical manufacturer for such classes of preparations as tinctures, elixirs, etc., which the larger consumer of alcohol has been able to obtain at better advantage and, more recently, at a lower cost, by utilizing specially denatured alcohols, some of which may find their way into the forthcoming Pharmacopoeia.

Permanence.—Coincident with the trend toward the purchase of certain galenical preparations—which were formerly manufactured in the drug store—in quantities to insure use in comparatively short time by the consumer or patient, there has arisen a problem in manufacturing these preparations on a large scale which will insure permanence in the face of temperature changes in transportation and while held in storage at convenient distributing points. This problem has opened the way toward investigation of methods to prevent discoloration, precipitation or other deterioration affecting the physical elegance of many products, with the result that any success attending such efforts may be offered for inclusion in the succeeding Pharmacopoeia, or, if the reverse be found, it may be suggested that such preparations be prepared extemporaneously.

Demand.—In the process of revision the desirability of adding or retaining or deleting an item is always beset with difficulty, since geographical location and climatic conditions may dictate the necessity for an article which may have little or no use in another section of the country. Many manufacturers of pharmaceuticals are national distributors and are in a position to supply information as to the demand for a given item, and reference to trade lists may reveal whether retention, deletion or addition is justifiable on basis of demand.

A general impression of the extent to which a manufacturer assists and is interested in the revision of the Pharmacopoeia may be gained from what has been set forth in this paper. The part played by any particular profession in the compilation of the U. S. P. may at times be magnified, but thoughtful reflection will

supply the evidence that the task of compiling and revising a book which serves in the several fields of medicine as a standard and formulary for such diversified preparations and compounds, is one which can only be accomplished through the hearty coöperation and combined efforts of all those concerned, governed and regulated by the Pharmacopoeia.

BROOKLYN, N. Y.

A SMALLER UNITED STATES PHARMACOPOEIA.

BY A. RICHARD BLISS, JR.

It is undoubtedly the opinion of the medical profession of to-day that the United States Pharmacopoeia is too large for practical use on the part of the physician, and that a properly applied, intelligent, eliminative process of sufficient scope, having for its object the exclusion of those portions that are generally looked upon as worthless or superfluous in the *practice of medicine*, would result in a *Tenth Revision* that would be more practical, of decidedly smaller bulk, and more generally consulted and actually *used* by the medical practitioner. The continued inclusion and admission of drugs and preparations, rather uniformly looked upon by *medical authorities* as useless or of questionable value, because of the "argument" that *some* physicians use them and that therefore they should be officially defined and recognized, has resulted in bringing about a condition in previous revisions that caused them to resemble rather a manufacturer's catalogue of specifications for numerous drugs, chemicals and preparations, than a book supposedly especially intended for *actual use* by the physician. The general impression concerning the original object of the United States Pharmacopoeia (and a correct impression) is that the book is intended to contain certain necessary data concerning *selected* drugs whose value in *Medicine* has been proved by results derived from extensive general experiences in their intelligent use and by scientific experimentation. Previous revisions have been getting farther and farther away from this object, and what might be called the commercial or manufacturing element has been more and more stressed until to-day, because of this change in the original United States Pharmacopoeial scope, a large number of the members of the medical profession look upon the work as something intended for the exclusive use of the pharmacist and the drug manufacturer. Another immediate result of this apparent state of United States Pharmacopoeial affairs is the tremendous growth and success of the proprietary and the patent medicine industries with their attending evils.

If the eliminative plan, adopted and applied by the Council on Pharmacy and Chemistry of the American Medical Association in the preparation of that valuable booklet entitled "Useful Drugs," were used in the preparation of the coming revision of the United States Pharmacopoeia, the Tenth Revision would doubtless prove as practical, as useful, as widely distributed, as frequently consulted, and as popular among physicians as "Useful Drugs." In fact there would be no need for a publication like "Useful Drugs!"

The writer, as a member of the United States Pharmacopoeia Revision Coöperative Committee of the A. O. A. C., in reviewing the "page proofs" of the proposed