tion and certain rules agreed upon should do away with so many loose terms which are still in common use, or are apt to become popular by misapplication, causing confusion, mistakes, and difficulties of varying consequences.

With the extension of trade throughout the world and the distinct probability that this country will remain, as during the war, one of the main collecting and distributing centers for these botanical products, it appears essential that careful attention be given to suitable and correct trade names. Let us profit from the experience of the past and work for and agree upon names which are not only simple and acceptable to the trade, but are more generally based upon scientific classification.

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OFFICIAL STANDARDS FOR BOTANICAL DRUGS.*

BY C. W. BALLARD.

Each revision of the Pharmacopoeia results in the deletion of a certain number of botanical drugs, but unfortunately these articles do not immediately pass into oblivion, in fact many of them survive commercially for several decades. Aside from the question of therapeutic value they are medicinal products for which there ought to be standards. The procedure of the last revision whereby many deleted drugs were transferred to Part II of the National Formulary is merely a temporary expedient. This practice, while of merit in that it furnishes official standards for articles not included in the Pharmacopoeia, cannot be continued indefinitely, else the Formulary will be in reality a second volume of the Pharmacopoeia and will rival the latter both in size and variety of contents. The National Formulary should be a formulary in fact as in title. It should supplement the Pharmacopoeia by establishing and standardizing formulae for the therapeutic agents listed therein. It should not be a book of standards for drugs of secondary importance. It is fitting that the American Pharmaceutical Association as an organization representing all ethical fields of pharmacy should bend its energies toward the compilation of a book for pharmacists. A National Formulary of this type would not be merely a book of formulae. It would necessarily include tests of identity, purity and assay processes where applicable to the preparations included. The many commercially important drugs and drug yielding products not included in either Pharmacopoeia or Formulary might be governed by official rulings similar in form to those published by the Bureau of Chemistry. This system of regulation possesses distinct advantages in that it is elastic and additions or changes may be made at any time. The present revision system amounts to legislation for ten-year periods and, while a certain degree of stability is essential, unforeseen events may warrant slight changes in the interim between revision periods. While the branding of a drug as "non-official" tacitly implies that it is of little importance, surely the consumers of these medicinal products are entitled to some measure of protection.

The numerous criticisms, comments and suggestions relative to the approaching revisions indicate a lively interest and tend to increase the value of the Pharma-

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copoeia. Each of the professions having occasion to use the book has its particular line of criticism and any revision with an idea of keeping the present form must harmonize these varied interests by compromise. Among the suggestions which follow are several which have been advocated by workers in various fields but the legal aspect of the pharmacopoeial descriptions, definitions and statements has received very little attention if one may judge from the published criticisms.

Definite Botanical Origins.—The phrase, "and other species," at once offers a loophole for substitution or sophistication. It admits an uncertainty which should not exist in a book of standards. If the Pharmacopoeia, the standard, is in doubt as to the origin of a drug, this fact is apt to lead to wrong conclusions in the lay mind or may easily be twisted in such a manner as to create a reasonable doubt in the mind of a court. Accurate determination of botanical sources is often a matter of difficulty as it may involve the sending of a botanist to the far distant source of a drug. Financial outlay is necessary but surely a start could be made with a few of the more important drugs. Where several related species of a drug are found to possess similar therapeutic properties each individual should be named in the definition.

Tissue Terminology.—The various criticisms of the phraseology adopted by the Pharmacopoeia for the microscopical descriptions of plant tissues might be overcome by the adoption of a standard terminology. But such a standard can only be established by agreement, national or international. It would be well within the scope of the Scientific Section of this Association to initiate a movement toward this end. Much of the difficulty will be overcome if the instruction in microscopy as given in the schools is broadened and the tendency of an instructor to use the terms most familiar to him, totally disregarding those in use elsewhere, is abandoned.

Descriptions of Foreign Materials.—In instances where stems, flowers or other unofficial parts of a plant are apt to be present, it is desirable that descriptions of these non-official parts be briefly stated. This procedure would be of as material assistance as is the practice of stating tests for impurities in drugs of chemical nature. It would also establish a standard for the structure of these non-official parts in cases involving legal action.

Indication of Diagnostic Characters.—The indication of diagnostic characters in microscopical descriptions has been suggested. This procedure would be of undoubted value to the pharmacognosist and the student. It would also prove of value in legal work.

Indication of Possible Adulterants.—This suggestion presents but one advantage—that of suggesting to the student what adulterants are likely to be employed. On the other hand it might be open to objection in that it gives information to those who are inclined to practice sophistication. It gives this type of dealer a clue as to what to avoid in his manipulations. Laying undue emphasis or giving official recognition to any one adulterant is apt to create doubt in the legal mind as to the gravity of the offense if adulterants not so specified are employed. In practice we find that the number of substances which might be used to adulterate drugs is extremely large and the specification of any particular item would probably be of little assistance to the analyst.

Standard Fineness for Powders Used in Descriptions.—Great structural differences are apparent in powders of differing degrees of fineness. The official descriptions of the various histological elements apply to single elements or masses in which cellular structure is clearly apparent. In a coarse powder the various tissues are so consolidated that clear views or comparisons are impossible. In exceedingly fine powders the elements are apt to be too disintegrated for the observation of important characters. In the establishment of an official standard of fineness for powders to be used in framing the official descriptions we must avoid both extremes. In laboratory practice a No. 80 powder has been found to give best results with the greater number of drugs.

Mouldy Drugs.—Records of drug inspections by various authorities show that not a few drugs are rejected because of mould growths appearing upon them. Microscopical examination, either with or without special staining methods, furnishes a rapid means of determining this objectionable material. A brief description of the technic of mould examinations would give official recognition to this method of detecting spoilage in drugs.

Moisture in Crude Drugs.—The Ninth Revision adopts moisture limits for chemicals but fails to establish a standard for moisture in crude drugs. In accurate ash determinations the moisture content is of considerable importance. This is especially true of those drugs which as received in commerce contain large amounts of earthy material and which are thus apt to exceed the official ash limit. In borderline cases the ashing of a thoroughly dried drug will naturally give lower results than if the article contains five to ten percent of moisture. From the standpoint of the consumer the amount of moisture present in a crude drug is of direct importance especially in instances where the drug is of high price. Varying amounts of moisture in the drugs used may cause great variation in the therapeutic properties of preparations especially those not amenable to assay.

Considering the divergent as well as the convergent interests of the professions which use the Pharmacopoeia as a guide, the work of revision is necessarily difficult. The attempts to satisfactorily include all material of interest to each individual or profession in one volume can hardly hope to ever be entirely successful. At the time of the earlier editions the number of medicines in general use was but a small fraction of those in vogue to-day; the pharmacist of necessity prepared all his medicines; tests of purity and identity were not included and last, but by no means least, the Pharmacopoeia was not a legal code. It is hardly possible to meet all these changed conditions and still adhere to the original form of the Pharmacopoeia. The time is rapidly approaching when these new demands must be met. How this will be accomplished will no doubt be a subject of no little importance in the deliberations of the Committee for the Tenth Decennial Revision.

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