Section on Pharmacopoeias and Formularies

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TO WHAT EXTENT SHALL POWDERED DRUGS BE RECOGNIZED IN THE NINTH REVISION OF THE PHARMACOPŒIA?

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The increasing proportion of vegetable drugs which occur in the market in a ground or pulverized condition, and the ready and extensive adulteration which has been practiced in the handling of drug powders is more or less familiar to all who are interested in the revision of the Pharmacopœia. Having had access to the work of the Sub-committee on Botany and Pharmacognosy for the ninth revision of the Pharmacopœia, the writer after a somewhat detailed study of the proposed text on powdered drugs is convinced that the subject is worthy of greater consideration than it has thus far been accorded.

That our knowledge of the histology of vegetable drugs has been greatly increased during the last decade can be demonstrated readily by an examination of the present-day text-books and other works on pharmacognosy. And the marked improvement in courses in plant histology, and in the examination of powdered drugs and foods offered by our schools and colleges of pharmacy show the rapidity with which this knowledge is being disseminated. From all quarters the Committee of Revision has received recommendations that powdered drugs be recognized in the Ninth Revision of the Pharmacopœia. And various branches of the American Pharmaceutical Association, faculties of colleges, and teachers of pharmacognosy have all joined in urging a fuller recognition of drugs in powdered form. Conditions such as these indicate the need for advancement of the Pharmacopœia in this direction. That the Committee of Revision has recognized this need, and decided to give powdered drugs a conspicuous place in the forth-coming revision, is evidenced by its adoption of the "General Principles to be Observed in the Ninth Revision of the United States Pharmacopœia, as suggested by the American Pharmaceutical Association" (circular 11, page 59), from which the following references are taken:

11, Standards for Powdered Drugs.—That titles and standards be introduced for such drugs as are properly used in the ground or pulverized condition and where the standards for the whole are not applicable to the powdered drug.

13, Pharmacognostic Descriptions.—That with the description of a crude drug, brief pharmacognostic descriptions, both macroscopic and microscopic when possible, be given, also the appearance of the structural elements in the powder, when examined microscopically, as a means of detecting adulteration.

17, Powdered Drugs.—The powdered drugs to represent the entire drug.

When the drug can be powdered without residue this should be required; in other cases the allowable tailing or residue should be determined.

If we keep in mind the idea that the Pharmacopœia will become a legal standard, it is evident that many points never previously considered will present themselves for consideration, and that definitions and descriptions must be more carefully and accurately drawn than ever before. It then becomes a question of prime importance for consideration: How far can the Committee of Revision safely go in describing the structural elements of powdered drugs when examined microscopically?

Of the many recommendations which have been made to the Committee of Revision none is specific in character. The writers have for the most part contented themselves with recommending that powdered drugs be recognized, and that their descriptions "be of practical value," and expressed in "terse, accurate, and concise" language. Rarely has any one expressed, even remotely, a method of procedure.

One writer on this subject has suggested the introduction of "terse and accurate statements wherever possible and of practical value in identifying the drug or detecting adulterations"; and also "methods of preparing sections and powders, stains and micro-chemical reagents for such purposes." Another has recommended that "powdered drugs be recognized in the next revision, and that they be concisely described, certain of their elements being designated by italicization or otherwise as identifying characteristics."

All will agree, I think, with these suggestions, that the descriptions shall be "terse, accurate, and concise and used wherever of practical value"; but the question of how far the Committee shall go is an open one, and one upon which opinions may well be at variance. Shall powdered drugs remain, as they appear in the present text, merely appended to the descriptions of the whole drugs, or shall they be given more conspicuous recognition and be placed upon a footing equal with that of the whole drugs?

Let it be said, in passing, that "methods of preparing sections and powders, stains and micro-chemical reagents," have no place in the Pharmacopœia. Work of that sort may well be left to the text-books; and it cannot be expected that the Pharmacopœia shall displace the dispensatories.

It must be conceded that, as the text stands, the treatment is much more liberal than that accorded by the pharmacopœia of any other country, still it is wholly inadequate to the subject. Drug powders are not given the prominence which their importance warrants; the descriptions frequently are too brief, and they are not coordinated properly with the preceding portions of the text.

According to the present arrangement the official definition is followed by a description of the whole drug, and then appended, seemingly, as an after-thought is a description of the powder, of which no mention has been made in any part of the preceding text. When introduced in this way, the exact relation of the powder to either the definition or description of the whole drug is somewhat difficult to determine.

To illustrate the point in question let Aconite be taken as an illustration:

Aconite is defined as "the dried tuberous root of Aconitum napellus Linné (Fam. Ranunculaceae): to which may be attached the portion of the stem-base

not exceeding 2 cm. in length, and yielding," etc. It is described as "more or less conical or fusiform, 4 to 10 cm. long, 1 to 2 cm. in diameter at the crown; externally dark brown or grayish-brown, smooth or longitudinally wrinkled, the upper portion with a bud, etc.

Then follows a description of the powder: "Powder grayish-brown, with numerous spherical somewhat plano-convex, and 2 to 5 compound starch grains, the individual grains being 0.003 to 0.015 mm. in size; tracheae mostly with slit-like simple pores, sometimes with spiral or reticulate thickenings or with bordered pores," etc.

What has this description of the powder to do with either the official definition or description, which have been concerned entirely with the whole drug? Is there a proper correlation between the official definition and the description of the powder? And what standing would the powder have if it were considered as a legal standard? Let us suppose, for example, it were necessary to state that the entire root of Aconite could not be pulverized and that a certain amount of residue were allowable. Would not such a statement in connection with the powder weaken the description, and make it appear inane, or even ludicrous when the official definition had specifically included the whole root?

If drug powders are to occupy the position which their importance warrants, it is evident that some method essentially different from that of the proposed text must be adopted. There are two methods of procedure which suggest themselves.

One is to change the official definition so it will include the powder. By this plan the definition of Aconitum would read as follows: The dried tuberous, root whole or powdered, of Aconitum napellus, etc. Then after the definition would follow the description of the whole drug, and after that the description of the powder. This method, while wanting somewhat in accuracy, has the commendable merit of brevity and conciseness, and cannot be objected to on the ground that it will add materially to the text. And it can be introduced with but little change in the text already submitted by the Committee.

The other method is suggested by paragraph 11 of the "General Principles to be Observed in the Ninth Revision," which reads, "That titles and standards be introduced for such drugs as are properly used in the ground or pulverized condition and where the standards for the whole are not applicable to the powdered drug." Let this general principle be extended to include all drug powders, and have each powdered drug appear under its own separate and distinct title. Then Aconite Powder for example would appear as "Aconiti Pulvis."

It will be urged against this method that it is cumbersome and requires considerable repetition. On the other hand it has some distinct advantages which more than off-set these objections. It directs especial attention to drug powders, and puts them on an equal footing with whole drugs. By this method, definitions can be made accurate and specific, and any qualifying or limiting statements in the description may be made to harmonize perfectly with the definition. By adopting it the committee would add materially to the value of the Pharmacopœia as a book of standards, and give proper recognition to a subject of steadily increasing importance.