SUGGESTED STANDARDS OF PURITY FOR FOODS AND DRUGS

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BY

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PREFACE.

In the year 1897 the author, in conjunction with the late Mr. T. H. Pearmain, undertook a work entitled "The Analysis of Food and Drugs," Part I. of which, "Milk and Milk Products," was published in June, 1897, and followed by Part II., "Water Analysis," in 1899. It was intended to complete the work in two more parts, one dealing with foods and one with drugs. It appeared, however, that it was not so much a work on the *analysis* of these substances that was required, but a book dealing more particularly with the *results of analysis*—that is, the *interpretation of results*. This view was strengthened by discussions with Mr. Cecil H. Cribb, with whom the author was engaged in writing on "The Statistics of Adulteration" in the *British Food Journal*, in 1900, and led to the final abandonment of Parts III. and IV. in separate form.

THIS work is the outcome of a series of articles on the statistics of adulteration published by Cecil H. Cribb and C. G. Moor, and the original intention was to have issued it under the joint names of Cecil H. Cribb, C. G. Moor and Martin Priest.

Messrs. Cribb and Priest, however, were unable to continue their collaboration, owing to pressure of work and other circumstances.

Many years ago an attempt was made by the Society of Public Analysts to suggest certain limits or standards as indicating the genuineness of certain articles, such as milk, butter, etc. Some of the figures then suggested are still in use, and the aim of the present work is to endeavour to extend the same principle to other articles

that come within the scope of analysts' duties generally. The figures here suggested as indicating genuineness or the reverse must be accepted as *tentative only*, and as by no means settled. In the case of some articles it may never be possible to place a numerical valuation on any figure or figures as indicating genuineness; still, in most cases, in order to form an opinion on an article, some standard must be decided on, and in cases where our knowledge is not so far advanced as to admit of this, it will be useful to compare the figures yielded on analysis with those obtained by other observers on samples of known origin, and such I have attempted to collect.

The principle of extending and improving the methods of testing and standardizing is noticeable in the 1898 edition of the British Pharmacopœia, which contains many more requirements in this direction than the previous (1885) edition, and the same idea is prevalent in the American, in the German, and in all modern works of the same nature. Similarly, in this country commissions have recently been held to determine on standards to insure the purity of dairy products, and to fix limits for the permissible quantities of preservatives in foods.

I have to express my indebtedness to the following gentlemen, many of whom have taken a considerable amount of trouble in replying to questions, in furnishing me with specimens and with unpublished work from their own laboratories: Messrs. Allen and Sons, J. Barclay, Bascombe, F. C. J. Bird, Theo. Brewis, C. M. Caines,* Dodd, H. Gadd, Hobhouse and Harvey, E. M. Holmes, H. W. Jones, W. E. Lucas, W. H. Naylor, J. C. Stead, J. C. Umney.

A great deal of the practical work embodied in this

* I am indebted to Mr. Caines for the abstracts of the German Pharmacopœia requirements.

book was carried out by Martin Priest, William Gladwyn, and William Partridge, to whom the author is also indebted for assistance and suggestions.

In addition I have to acknowledge my indebtedness to the *Analyst*, the *Year-Book of Pharmacy*, the *Chemist and Druggist*, the *Pharmaceutical Journal* and the *American Journal of Pharmacy*. All these publications contain information which is indispensable to a practising analyst, and without constantly consulting them he cannot hope to keep in touch with modern work. Many references will be found to original papers, but I do not pretend that such references are by any means exhaustive, and would urge readers to carefully examine the indexes of the above publications when dealing with doubtful samples. Not only ought the scientific aspect of each problem to be considered, but the practical or trade applications; this latter view sometimes does not receive the attention it deserves. For example, there are certain preparations of medicine which are directed to be made up in a particular way, which when tested are found to give results not quite in accord with what might at first sight be expected, as, for instance, vinum quininæ, certain tinctures, liquid extracts, and the like.

Without some knowledge of the actual preparation, mode of keeping, and of dispensing, it is impossible to come to a just decision as to their quality or genuineness, and for this reason I would urge on all analysts holding appointments under the Food and Drugs Acts to make themselves thoroughly familiar with the current weekly literature bearing on these points, and in doubtful cases to examine *preparations of known origin, side by side with the sample in question.*

At the present day, deliberate adulteration or substitution in the case of drugs is rare, though it does still occur, notably in the case of santal oil, bees-wax, essential oils,

preparations of ipecacuanha, strophanthus, etc., while the large quantities of foreign matter in many other articles must be regarded as an adulteration.

There is a great tendency on the part of the public to try and obtain "bargains" in medicinal preparations, as in everything else, and this demand naturally creates a supply. Where there is a demand for cheap medicines,* they are sure to be made from inferior articles, and less care will be taken in their preparation than if a fair price were paid for a good article.

Such attempts at economy on the part of the public do not benefit them, and lower the general excellence of medicine of known and approved composition, and cause an increased demand for patent medicines or secret preparations, which may in many cases do more harm than good. In the United States, in Germany, and in other countries, many such preparations have been officially examined, and it is much to be desired that a similar course could be adopted in this country, seeing that, from the extravagant statements made, there can be no possible doubt that many persons are imposed on, and gravely prejudiced by being induced to purchase remedies that cannot possibly fulfil the claims made for them. The moral of the above is that every attempt should be made to induce the public to adhere to Pharmacopœial drugs and preparations of the best quality, and to leave questionable remedies alone.

In considering the merits of any particular article, whether examined under the Food and Drugs Acts, or for other purposes, due regard must be had to the purpose for which it is intended, seeing that there may be a legitimate use for an article which need not be pure in certain cases, whereas if intended for medicinal use its

* A precisely similar view is to be found expressed very clearly on p. 290 of the *Year-Book of Pharmacy*, 1900, in the Presidential Address at the Pharmaceutical Conference of that year.

purity would be essential; but when such commercial articles are sold they should be *plainly* marked as "mixtures."

In the following pages a large number of figures on commercial tinctures will be found. *Those to which the names of various observers are attached were examined by them, and in most cases the tinctures were prepared under their supervision.* In the case, however, of all those estimations of gravity, total solids* and alcohol which were examined in the author's laboratory, and are followed by the initials "M. and P." or by the name Partridge or Gladwyn, the samples were *trade samples, respecting the origin of which there is no information;* and if anomalies are noticeable in these figures, they may be due to incorrect manufacture, and *are in no way to be taken as standards;* they are only of interest in showing the general character of large quantities of commercial tinctures, and the variations in the total solids are interesting, and show what care must be exercised in attempting to judge of a sample on this figure.

Regarding the scope of this work, it will probably appear to many readers that some of the articles mentioned are of small importance, while more important articles are omitted.

Thus, in the case of beer and of preservatives, the author does not feel competent to deal properly with subjects which require special knowledge and an experience he has had no opportunity of acquiring.

With regard to medicinal preparations, the original intention was to deal with all British Pharmacopœial preparations, but as this proved too large a task, a selection had to be made, which led to the omission of most chemicals which either are not likely to be adulterated or for which there are definite chemical tests presenting

* These figures are in *grammes per* 100 *c.c.*