OFFICIAL, STANDARDISED AND RECOMMENDED METHODS OF ANALYSIS

Official, Standardised and Recommended Methods of Analysis

Compiled and edited

for the

ANALYTICAL METHODS COMMITTEE

of the

SOCIETY FOR ANALYTICAL CHEMISTRY

by

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Published for the
ANALYTICAL METHODS COMMITTEE
by
W. HEFFER & SONS LTD.
1963

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Preface

An analyst faced with the task of determining a constituent or a property that he has not previously determined or of applying a known basic technique in an unfamiliar context will proceed more assuredly if he can have the advice of colleagues who have encountered and solved the same problem. Reference to the literature may provide him with several answers, each of which is claimed to be the method *par excellence* by its originator, but he has to make a choice with perhaps little, if any, guidance about how the methods fare in other hands. It is not enough that he can find a method that has given concordant results in the originator's laboratory—the assurance he seeks is that it will give results with an acceptable "between laboratories" variance when tested collaboratively.

This book meets this need. It enables an analyst to ascertain within a few minutes the tried and tested methods applicable to any one of a wide range of analytical problems; the time-consuming literature surveys have been made for him by experts. The methods recommended by the Analytical Methods Committee, those that have a legal status and those that occur in "official" publications have all passed the test of critical collaborative trials. The "tentative" methods are still under review but the fact that they have reached this status is evidence that already they have acquitted themselves well in collaborative studies. The "recommended" methods are procedures in which the relevant experts have confidence but of which published reports of collaborative trials may not exist.

It is my hope, and indeed my belief, that this book will be a valuable guide to many practising analysts but this service, initially envisaged by the Analytical Methods Committee of the Society for Analytical Chemistry, was made possible only by the interest of specialists in the project, which prompted them to undertake the task of compiling the bibliographical sections, and by the enthusiasm of those members of the Society who voluntarily undertook free of charge the long-term research and collaborative trials upon which the methods in Part I are based. To them all, on behalf of Council and of the practising analysts who benefit from the book, I extend grateful thanks.

A. J. Amos
President
The Society for Analytical Chemistry

November 1962

Introduction

For more than 30 years the Society for Analytical Chemistry (formerly the Society of Public Analysts and Other Analytical Chemists) has been instrumental in organising collaborative investigations into published methods of analysis. The work was undertaken originally under the aegis of the Standing Committee on Uniformity of Analytical Methods and in later years by various sub-committees of the Analytical Methods Committee of the Society. Reports of these investigations have been published in *The Analyst*, and therein have been recorded the results of collaborative assays and concomitant investigations, which have led to the drafting of recommended methods of analysis that will give results of acceptable precision in the hands of several analysts working in different laboratories. The value of these investigations is reflected in the fact that many of the recommended methods have been adopted, either unchanged or with only minor amendment necessitated by experience in the use of the method or the development of improved analytical techniques, by such bodies as the British Standards Institution, the British Pharmacopoeia Commission and the Pharmaceutical Society of Great Britain in their standards.

In addition to this work, the Society has actively participated in, and in some instances instigated, collaborative investigations in association with government departments, trade associations and other learned societies. The results of these investigations and the recommended methods arising from them have similarly appeared in *The Analyst*, and in one instance have been published, in addition, as a separate book.[1]

It has now been decided that a useful purpose would be served if these numerous recommended methods of analysis were collected together to form the first British book of authorised and recommended methods. This has been done and these standardised methods constitute Part I of this book. With each method, information is given on its source, together with a journal reference to the original report of which the method formed a part, so that an analyst can obtain such further information as he may desire on the development of the recommended procedure. All methods published up to May 1962 that are still considered to be valid are included, together with one, that for the determination of copper in organic matter, which has not yet (November 1962) appeared in print. A certain amount of re-writing and editing has been necessary in an attempt to achieve a uniform presentation, but otherwise the methods are, in most instances, as originally published; in some instances, however, small amendments have been made in the light of further experience with the method.

The Society acknowledges its debt to the Association of British Chemical Manufacturers, the Association of British Manufacturers of Agricultural Chemicals, the Inter-Departmental Advisory Committee on Poisonous Substances Used in Agriculture and Food Storage, and the Pharmaceutical Society of Great Britain for their agreement to the publication in this book of methods that were developed by various joint committees with these bodies.

In 1951 the Society published a bibliography of standard, tentative and recommended or recognised methods of analysis.[2] This book is out of print and the time

[1] "Recommended Methods for the Analysis of Trade Effluents," prepared by a Joint Committee of The Association of British Chemical Manufacturers and The Society for Analytical Chemistry, London, 1958.

[2] "Bibliography of Standard, Tentative and Recommended or Recognised Methods of Analysis," The Society of Public Analysts and Other Analytical Chemists," London, 1951.

has been considered appropriate to issue a new edition. It is this revised bibliography that makes up Part 2 of the book. In all, 44 sections, some not included previously, covering a wide variety of materials, have been prepared by specialists. The name of the compiler of each section, together with the organisation or firm with which he or she is associated, where applicable, are given against the title of the section in the list of contents. The Analytical Methods Committee wishes to record its sincere thanks to these people for the valuable time and effort that they have given.

In the original bibliography, only British and American authorities were quoted in the references; in this revision, these have been extended to include, in many of the sections, any readily available publications in French, German or other languages for which English translations are available. In this country, copies of all foreign standards mentioned, and in many instances translations of them, may be either purchased or borrowed from the Library of the British Standards Institution, 2 Park Street, London, W.1.

The sections are now arranged in alphabetical order and the presentation within the sections has been completely changed because the very large increase in the number of references in most sections has made the previous layout impossible. However, the methods have again been classified into three types:

(*a*) those included under the heading of official and standardised methods are methods that appear in Statutory Regulations, Acts of Parliament and other "official" publications, such as national pharmacopoeias, or have been the subjects of collaborative trials, such as the recommended methods of analysis included in Part I of this book;

(*b*) those included under the heading of tentative methods are methods issued by authoritative bodies for experience to be gained in their application before they are finally adopted as "official"; and

(*c*) those included under the heading of recommended methods are procedures that the contributor considers are likely to be useful to the analyst, although this opinion is not necessarily based on his personal experience with the methods.

In each section the compilation date is given, and, although in many instances, no relevant publication has appeared between the time of compilation and the publication of this book, the information in each section is not claimed to be more up to date than is indicated by the compilation date.

A number of Sub-Committees of the Analytical Methods Committee are still actively engaged in collaborative trials in various fields so that more standardised methods will from time to time be published in *The Analyst*.

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PART 2. Bibliography of Official, Standardised, Tentative and Recommended Methods of Analysis

PART 1

Standardised Methods of Analysis