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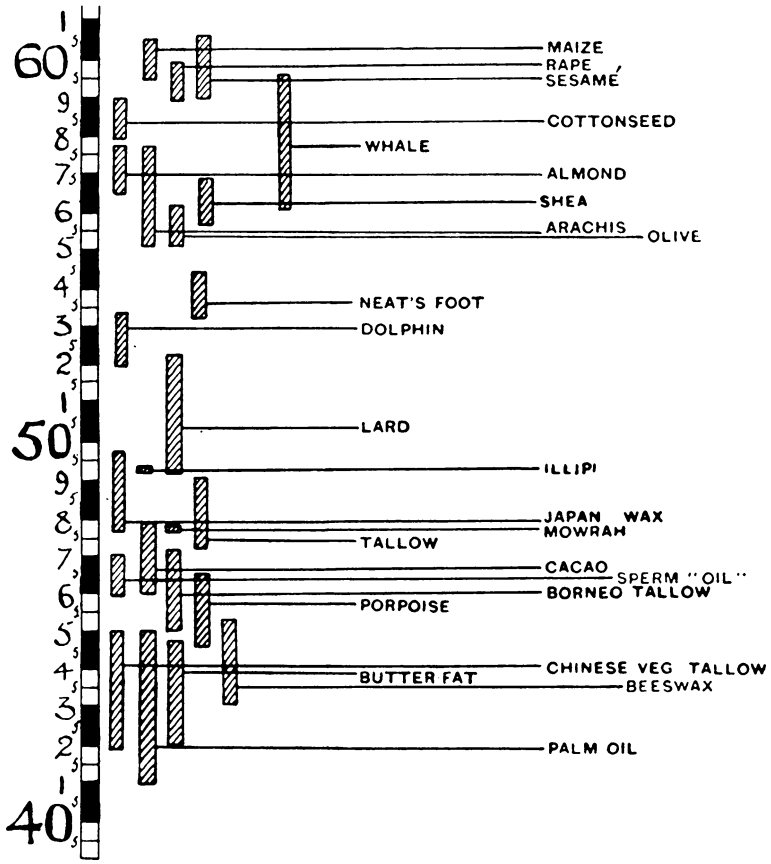
TECHNICAL HANDBOOK OF OILS, FATS AND WAXES

VOLUME II

Practical and Analytical

METHOD OF USE OF COLOURED DIAGRAM
(REFRACTIVE INDICES)



TECHNICAL HANDBOOK
OF
OILS, FATS AND WAXES

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WITH 69 ILLUSTRATIONS

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PREFACE

THE present volume of this treatise is concerned with the whole subject of the practical examination and analysis of the natural and hydrocarbon (mineral) oils, fats, and waxes. It is intended as a handbook of practical methods for the use of technical chemists and others concerned in the examination of oils and kindred substances, but the requirements of students of this subject have also been taken into account throughout the book.

Thus, the more important operations are illustrated by means of direct photographs in order that the methods of working, or the details of the apparatus may be clearly seen.

An endeavour has been made to continue the principle, aimed at in the first volume, of presenting the matter in a succinct and readily comprehensible form. To this end the subject matter has been carefully systematised throughout, and in the instructions for the performance of the various analytical operations the directions have been simplified by the use of concise language, and by subdivision into a series of short complete stages, or steps, each involving a single direction. The utility of this manner of presentation has been shown in the authors' own experience extending over a number of years.

It has also been our aim to eliminate, as far as possible, all untrustworthy details and methods of working. Some of the methods given are entirely original, as e.g. in the sections on Solubility, Viscosity, and Oxygen absorption. In many other cases modifications have been made in the procedure—the suggestions of the authors and others—in order to facilitate the work, shorten the time, or increase the accuracy of the results. In most cases the methods described have been carefully examined, and may be confidently accepted as reliable within the limits stated. It is well to remember in this connection, that many of the tests available are of quite an empirical character.

With regard to the arrangement of the book, the following brief description may be of service:

Section I is introductory, and outlines the main principles for

success in analytical work. Brief directions are given for the preparation of standard solutions and the use of simple apparatus is explained by photographs for the student.

In Section II directions for sampling and for making preliminary tests of the fatty material are given.

Section III deals with those tests of general application which have a claim to be regarded as "standard analytical determinations." To each of these is given the same indicating number which is employed to designate it in the first volume, and this figure is adhered to throughout the book to facilitate reference.

Section IV embodies those tests which concern particular oils or groups of oils, and the authors have made a careful examination of these, excluding those which were unreliable, and modifying the procedure of others where this appeared desirable.

In Section V the examination of the mixed fatty acids from the oils and fats has been considered, since in some important cases (e.g. in the examination of soaps) the original oils are not available. Tables are given of the more important analytical determinations, and a revision of the refractive indices and of the iodine values has been undertaken. The remaining portion deals with the alcohols, with a full description of the methods for testing glycerin, both crude and refined.

Section VI deals with the application of the foregoing methods to the analysis of the hydrocarbon oils and waxes, together with the special tests for these oils.

Rosin and turpentine, as being related in interest and also commercially with the natural oils and fats, are dealt with in Section VII and methods of testing and of determining adulteration are given.

In Section VIII the authors have discussed the difficult question of the interpretation of the analytical results obtained with commercial samples. This includes the problem of the natural variation of oils and fats, and of the modifications produced by various technical operations. The question of the quantitative detection of adulteration is reviewed, and the oils are considered under the various groups in which they are employed in commerce. A tabular statement of the chief analytical data is included with each group of oils, and practical examples of adulteration and its interpretation are cited.

Section IX is intended primarily for the student. In it an attempt is made to give a systematic scheme of analysis for the identi-

fication of an oil, fat, or wax of assumed purity. The classification adopted in Volume I has been adhered to, and it is hoped that the scheme may be of value in familiarising the student—and others—with the distinguishing features and the class relationships of these compounds.

Section X is devoted to tables of strengths of solutions of various reagents, and to other data not included in the text of the book.

The authors wish to acknowledge the courtesy of Messrs Bolton and Revis and their publishers (Messrs Churchill) for permitting the use of the block of beef and lard crystals given on page 153. Messrs Hilger have been good enough to supply illustrations of their refractometers on pages 53 and 56, and have also given details of these instruments. We also desire to thank Mr G. B. Stokes and the publishers of the *Analyst* for permission to copy the illustration of the fat extractor on page 22.

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