TESTING MILK AND ITS PRODUCTS; A MANUAL FOR DAIRY STUDENTS, CREAMERY - AND CHEESE FACTORY OPERATORS, FOOD CHEMISTS, AND DAIRY FARMERS

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E. H. FARRINGTON & F. W. WOLL

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PREFACE TO FIRST EDITION.

The present volume is intended for the use of dairy students, creamery- and cheese-factory operators, practical dairymen, and food chemists, others interested in the testing or analysis of milk and its products. The subject has been largely treated in a popular manner; accuracy and clearness of statement, and systematic arrangement of the subject matter has, however, been constantly kept in mind. The aim has been to make the presentation intelligible to students with no further training than a common-school education, but their work will naturally be greatly lightened by the aid and guidance of an able teacher.

Complete directions for making tests of milk and other dairy products are given; the difficulties which the beginner may meet with, are considered in detail, and suggestions offered for avoiding them. It is expected that a factory operator or practical dairymen, by exercising ordinary common sense and care, can obtain a sufficient knowledge of the subject through a study of the various chapters of this book to make tests of milk, cream, etc., even if he has had no previous experience in this line.

For the benefit of advanced dairy students who are somewhat familiar with chemistry and chemical operations, Chapter XIV has been added giving detailed instruction for the complete chemical analysis of milk and other dairy products. The detection of preservatives and of artificial butter or filled cheese has also been treated in this connection.

As the subject of milk testing is intimately connected with the payment for the milk delivered at butter- and cheese factories, and with factory dividends, a chapter has been devoted to a discussion of the various systems of factory book-keeping, and tables greatly facilitating the work of the work of the factory secretary or book-keeper have been prepared and are included in the *Appendix*.

Acknowledgment is due to the following parties for the use of electrotypes, viz: Creamery Pkg. Mfg. Co., Chicago, Ill.; Vermont Farm Machine Co., Bellows Falls, Vt.; Elgin Mfg. Co., Elgin, Ill.; D. H. Burrell & Co., Little Falls, N. Y.; De Laval Separator Co., New York City; Henry Trömner, Philadelphia, Pa.; Springer Torsion Balance Co., New York City; J. H. Monrad, Winnetka, Ill.; Borden & Selleck Co., Chicago, Ill.; Dairymen's Supply Co., Philadelphia, Pa.; Bausch & Lomb Opt. Co., Rochester, N. Y.; John W. Decker, Madison, Wis., and the agricultural experiment stations at New Haven, Conn., and Madison, Wis.

Madison, Wis., October 1, 1897.

PREFACE TO FOURTH EDITION.

The first three editions of this book were exhausted in about a year. The present edition has been thoroughly revised, and such additions have been made to it as were found necessary to bring it up to date. The general adoption of the book as a text-book in American Dairy Schools, as well as the favorable reception which it has been accorded by users of Babcock testers and the dairy public in general is naturally a source of gratification to the authors.

Madison, Wis., Dec. 15, 1898.

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Testing Milk and Its Products.

INTRODUCTION.

The need of a rapid, accurate and inexpensive method of determining the amount of butter fat in milk and other dairy products became more and more apparent, in this country and abroad, with the progress of the dairy industry, and especially with the growth of the factory system of butter- and cheese making during the last few decades. So long as each farmer made his own butter and sold it to private customers or at the village grocery, it was not a matter of much importance to others whether the milk produced by his cows was rich or poor. But as creameries and cheese factories multiplied, and farmers in the dairy sections of our country became to a large extent patrons of one or the other of these, a system of equitable payment for the milk or cream delivered became a vital question.

1. The creameries in existence in this country up to within ten years were nearly all conducted on the cream-gathering plan: the different patrons set their milk, and cream gatherers hauled the cream to the creamery, usually twice or three times a week, where the cream was then ripened and churned. The patrons were paid per *inch* of cream furnished; a creamery inch is a quantity of cream which fills a can twelve inches in diameter, one