is so important in relation to the pure food law. The various flavoring substances, such as vanillin, saccharin, etc., are treated at length, as are the medicinally important bodies throughout the book. The main portions of the volume, devoted to the essential oils, are, in the opinion of the reviewer, well written and up-to-date. The Extraction of Essential Oils, Classification, General Characters, Analysis, Constituents, Hydrocarbons, Olefinic Terpene Alcohols and Aldehydes, Cyclic Terpene Alcohols, Phenols and Phenolic Ethers, Ketones, Sulphuretted Constituents, Special Characters of Individual Essential Oils and Terpeneless Essential Oils are each discussed in a separate paragraph. The material given is quite full enough for practical purposes and no serious errors were detected. Especially useful are the tables of the important essential oils and of their constituents. Rubber and the resins are thoroughly discussed as follows: Caouchouc and Gutta-percha, Chemical Composition of Resins, General Character of Resins, Resins, Oleo-Resins or Turpentines, Gum-Resins. In general the volume is quite satisfactory.

ALFRED HOFFMAN

Las Plantas Usuales de Costa Rica. By HENRI PITTIER. Washington, H. L. & J. B. McQueen. 1908.

This work on the useful plants of Costa Rica will be welcomed by students of economic botany and tropical agriculture. Professor Pittier has already produced several works relating to tropical agriculture, contributions to the flora of Costa Rica, monographs of certain Central American genera of plants, and treatises on the ethnology and languages of several aboriginal tribes of Central and South America. The present work is illustrated with thirty-one plates, most of which are reproductions of natural size photographs of fruits and plants made by the author. An account of physical features and climate of Costa Rica is given, together with the characteristic plants of the various zones of vegetation, a list of plants grouped according to their uses, the etymology of their common names, derived as they are from various sources, Nahuatl, or Aztec; the language of the ancient inhabitants of Hayti; various tribes of Central America; and even from the Quichua of the Andes of South America. In addition to these names those of Spanish origin are given. Then follows an alphabetical enumeration of the useful plants of the republic, a tabulated list of the number of species belonging to each plant family thus far known to occur within its limits, and an index to the plants under their botanical names. The work ends with a very complete bibliography of works on tropical agriculture and the botany of Central America. Professor Pittier's present work is the first of its kind dealing with Central America. It was published under the auspices and by the direction of the government of Costa Rica.

W. E. SAFFORD

Human Foods and their Nutritive Value. By HARRY SNYDER. New York, The Macmillan Co. 1908.

At last man is having his share of the results of science applied to animal life. The author clearly states the twentieth century view when he says:

> It is believed that a better understanding of the subject of nutrition will suggest ways in which foods may be selected and utilized more intelligently, resulting not only in a pecuniary saving, but also in greater efficiency of physical and mental effort.

This volume will not only supply a need, but will satisfy a real want, a want becoming acutely felt by the laity who are asking for some comprehensible statements as to human foods and their various qualities and relative values. One feels instinctively the master dealing out knowledge at first hand. Here is no compiler sifting more or less ancient and possibly outgrown material.

Not only teachers and students but the business man who has been warned by his physician to take thought for his diet, the club woman who has to "write up a paper" will find sound science as well as useful information about the many kinds of human foods. Such passages as the two quoted below convey economic lessons of great importance.

In older agricultural regions, where the cost of beef production reaches the maximum, dairying is generally resorted to, as it yields larger financial returns, and as a result more cheese and less beef are used in the dietary. As the cost of meats is enhanced, dairy products, as cheese, naturally take their place (page 96).

Food notions have, in many instances, been the cause of banishing from the dietary wholesome and nutritious foods, of greatly increasing the cost of living, as well as of promulgating incorrect ideas in regard to foods, so that individuals and in some cases entire families have suffered from improper or insufficient food (page 253).

The tables showing composition, digestibility, etc., are taken from the publications of the U. S. Department of Agriculture, based on American work in which Professor Snyder has played a large part. The chapters on cereals and bread are mainly the results of studies in his own laboratory.

It would have added to the value of the volume as a text-book if some of the illustrations had been better prepared. A student would find some difficulty in recognizing the varieties of starch from the indistinct figures given. On page 90 the centrifuge should have been designated as of fractional size as compared with the other apparatus or have been omitted altogether.

The water analyst wishes there had been a word of caution on page 278 as to the metals of which cheap water stills are often made. The discussion of the ice supply might also have included the statement that all ice used directly in foods and drinks should be crystal clear and not frothy or bubbly.

The chapter on laboratory practise and the admirable review questions will prove most helpful not only to teachers of home economics but also to the general science teachers many of whom are just ready to use this kind of information in their classes.

Ellen H. Richards

SCIENTIFIC JOURNALS AND ARTICLES

The opening (January) number of volume 10 of the *Transactions of the American Mathematical Society* contains the following papers:

Eduard Study: "Zur Differentialgeometrie der analytischen Curven."

G. A. Miller: "The central of a group."

J. I. Hutchinson: "The hypergeometric functions of N variables."

Virgil Snyder: "Surfaces derived from the cubic variety having nine double points in four dimensional space."

A. E. Young: "On a certain class of isothermic surfaces."

A. E. Landry: "A geometrical application of binary syzygies."

L. E. Dickson: "Definite forms in a finite field."

The December number (volume 15, number 3) of the *Bulletin of the American Mathematical Society* contains: "The September Meeting of the San Francisco Section," by W. A. Manning; "Note on Statistical Mechanics," by E. B. Wilson; "On certain Constants Analogous to Fourier's Constants," by C. N. Moore; "The Cologne Meeting of the Deutsche Mathematiker-Vereinigung," by R. G. D. Richardson; "Goursat's Cours d'Analyse," by W. F. Osgood; "Shorter Notices": D'Ocagne's Calcul graphique et Nomographie and Le Calcul simplifié, by L. I. Hewes; Durège's Theorie der elliptischen Funktionen, by J. I. Hutchinson; Veblen and Lennes's Introduction to Infinitesimal Analysis, and Hedrick's Algebra for Secondary Schools, by James Pierpont; Sturm's Lehre von den geometrischen Verwandtschaften, Erster Band, and Scheibner's Beiträge zur Theorie der linearen Transformationen, by Virgil Snyder; Lebon's Table de Caractéristiques des Facteurs premiers, by G. A. Bliss; Serret-Scheffers's Lehrbuch der Differential- und Integralrechnung, by A. R. Crathorne; Blaschke's Mathematische Statistik, by H. L. Rietz; Fleming-Aschkinass's Elektrische Wellen-Telegraphie, by E. B. Wilson. "Notes"; "New Publications."

The January number of the *Bulletin* contains: "The October Meeting of the American Mathematical Society," by F. N. Cole; "On the Groups Generated by two Operators Satisfying the Condition $s_1 s_2 = s_2^{-2} s_1^{-2}$," by G. A. Miller; "The Teaching of Mechanics" (review of Jeans's Theoretical Mechanics), by E. W. Brown; "Economics" (review of