

mining fat will soon be discovered, so convenient and at the same time so cheap that it may be capable of being employed on small farms."

The strongest features of the work are: The part relating to the testing of the efficiency of separators; and the chapter on cheese-making. The figures for the creaming efficiency of separators are old and misleading, on account of the great improvements which have been made in their manufacture. The methods which are employed for testing their efficiency are however scientific. It is refreshing to read that when separator skimmed milk contains much less than one-tenth per cent. fat, the results are to be viewed with suspicion. The part relating to the importance of cleanliness in all dairy operations is also well treated.

The book has, however, been weakened by translation. The translators have aimed to produce a so-called popular book, and they have continually misused scientific terms. A calorie, page 117, is the amount of heat required to raise either *one pound* or *one kilo* of water 1°. On page 85, under the head, "Determination of Milk-sugar," the directions read "After it has been boiled for six minutes it is filtered through asbestos, and the reduction of the copper takes place spontaneously in the asbestos tube." On page 204, acidity is imparted to milk by either hydrochloric acid or soda. Fat, after saponification, is called butter. On page 284 condensed milk is called thickened milk. On page 224, a cut is given of a cheese mold, and it is called a cheese vat. On page 219, a curd knife is called a cheese vat. On page 81, an evaporating dish is called a thin porcelain basin.

The book should have been decreased in size, by omitting the obsolete parts and by a vigorous pruning of the cumbersome parts relating to the treatment of trivial matters.

HARRY SNYDER.

WATER AND PUBLIC HEALTH. BY JAMES H. FUERTES. New York: John Wiley & Sons. 75 pp. Price \$1.50.

Mr. Fuertes has brought together much valuable information, and his method of stating a large part of it in graphic form, renders it decidedly more serviceable. Long columns of figures cannot be digested without considerable mental effort, but a

coordinated chart strikes the eye at once. The very instructive illustration on page 7, showing the relations between "height of ground water," "extent of sewerage," and the "typhoid death-rate," could have been improved had the ordinates for the "ground water curve" been increased. Printed as it is, the scale is too small for easy reading.

Referring to the correspondence between an improved typhoid death-rate and the introduction of purer municipal water supplies, the author says, "other circumstances may have had something to do with this reduction, such as better care of the sick." This is true, but it could have been added that improvement in the typhoid rate not uncommonly antedates the sanitary betterments, because of the private purchasing of drinking water from other and purer sources.

The author forcibly presents the care exercised by European authorities in furnishing the consumers with water, either unpolluted or else improved to the greatest extent permitted by sanitary science; and he graphically illustrates what may be expected if Americans continue to use raw water from sources such as those whence many of our cities now draw their supplies.

The book is well worthy of a place in the library of every one interested in the water question, whether his interest be that of a citizen or of a specialist.

W. P. MASON.

ELEMENTS OF CHEMISTRY. BY RUFUS P. WILLIAMS. viii + 412 pp.  
Boston: Ginn & Co. 1897. Price, \$1.20.

Personal contact with twenty-five hundred pupils in chemistry and some experience in the preparation of text-books, have made it possible for the author of this work to prepare a book unusually free from erroneous statements. It resembles the "*Introduction to Chemical Science*," an earlier book by the author, but nearly all topics are treated with greater fulness, and the text is less marred by abbreviations. The experiments are numerous and suggestive. The illustrations are clear. The choice and arrangement of topics will not meet with universal approval. The number of laws and theories that are mentioned, and, in most instances, discussed, seems excessive for an elementary book that is intended chiefly for the use of high schools. After a brief account of oxygen, nitrogen, hydrogen