

includes Mechanical Disinfection, Sterilization by Heat, Chemical Disinfectants, Metallic Salts, Organic Substances, Compounds Related to the Alcohols, Practical Methods, Personal and Internal Disinfection, Preservation of Food, Legal Statutes and Regulations, and Methods of Analysis. The text shows evidence of having been written with a decided view towards accuracy of statement. It is a book that recommends itself in the highest degree to chemists interested in the subjects of which it treats; to sanitary officers; to inspectors of meat and milk and foodstuffs in general; to medical men, and to those engaged in the various industries in which disinfection and preservation of substances are concerned.

JOHN MARSHALL.

BONE PRODUCTS AND MANURES. BY THOMAS LAMBERT. London: Scott, Greenwood & Co. 162 pp. Price, \$3.00.

The system of intense cultivation, practiced by the farmers of England, renders the contents of this book especially valuable to English farmers. American farmers, however, are rapidly coming to the same system of culture and hence the book does not come amiss for this country.

The methods of preparing bones for fertilizing purposes and the characters of manure produced therefrom are treated rather from the popular than from the strictly scientific point of view.

The relation of manures to soils and plant life form the subject of Chapter V and are of especial interest. The author says: "As the rich soil of a country becomes exhausted through centuries of crude agricultural working, so agriculture declines if no means are taken to restore by artificial means that wealth of nutriment which it formerly possessed, and, as it declines, so must the nation's money be increasingly spent abroad to supply the necessary food."

While this remark is particularly true of England, it is not without significance for every country. It is stated on page 66 that "The mineral constituents on which the fertility of a soil depends are confined to phosphoric acid, potash, nitrogen in the form ammonia, and, to a lesser extent, lime. This statement would have been somewhat more accurate if it were modified to read, "nitrogen in the form of nitric acid," as ammonia is not known to be a direct fertilizer for green plants. The importance of providing these mineral substances for plant growth is illus-

trated by quoting the words of a leading American agriculturist as follows :

“The farmer raises no crops which do not contain them, he sells no animal or vegetable which does not take them from his farm, and he has no soil so rich that they, or some of them, need not be returned to keep up its fertility. Whatever course of cultivation he pursues, he should never lose sight of these elements, and he should pay no greater heed to the dollars and cents that he receives and pays out than to the nitrogen, phosphoric acid, and potash which constitute his real available capital, and whose increase or decrease marks the rise and fall of his true wealth.”

Manures are divided by the author into two classes, natural and artificial. This evidently, however, refers to their method of occurrence rather than to their nature. A distinction is made in this country, which is hardly justified, by referring to the so-called natural manures as “manures” and to the artificial manures as “fertilizers.” Both kinds are alike manures and both are alike fertilizers.

Guano is described as the rich excrementitious matter of sea-birds found on the Peruvian coast. The term is generally applied to such matter, no difference what its origin may be.

There is a discussion of special or mixed manures for particular crops, such as potatoes, turnips, grass lands, tobacco, sugar-cane, etc. There is always, of course, some doubt about the reliability of formulas made up from crops, since these formulas are made without reference to the character of the soil on which they are placed. Nevertheless there is a general demand for such special formulas and a work of this kind would not be complete without an attempt, at least, to meet this demand.

Part 3, devoted to analyses, is, as a matter of course, of a very elementary character inasmuch as the whole subject is discussed in 18 pages and in so short a space no very elaborate analytical methods could be developed.

This little work, as before intimated, while it would not be of particular value to scientific investigators, contains much that is of interest and much that is helpful to the practical man of affairs and especially the intelligent farmer.

H. W. WILEY.