

MANUAL OF AGRICULTURAL CHEMISTRY. BY HERBERT INGLE. London : Scott, Greenwood & Co. 412 pp. Price, \$3.00.

This work is based upon lectures delivered for several years by the author to classes of agricultural students, many of whom had already acquired some knowledge of general chemistry. The work is devoted particularly to the general chemical side of agriculture rather than to the analytical, and it does not in any sense profess to be a laboratory manual, although some accounts of analytical processes are produced.

The book treats in Chapter II of the atmosphere, in Chapters III, IV and V of the soils, in Chapters VI, VII and VIII of manures, Chapters IX, X and XI of plants, Chapter XII of animals, Chapter XIII of foods and feeding, Chapters XIV and XV of milk, and Chapter XVI of miscellaneous products used in agriculture. The general importance of the relations of chemistry to agriculture is shown in the introduction comprising the first chapter.

In the discussion of the atmosphere, the nitric acid derived therefrom which enters the soil receives special notice. The solid matters also, which are carried from the earth to the atmosphere, are not neglected. The soil is described as "the layer of more or less disintegrated rock which covers a large portion of the surface of the earth and which is fitted, under proper conditions of climate, to support the growth of plants." In the discussion of the origin of the soil and the methods of rock disintegration and the classification of soils the author has followed very closely the treatment of the same subject in the first volume of my "Principles and Practice of Agricultural Analysis".

In the general agricultural discussion there are chapters on natural manures, meaning those produced on the farm. The artificial manures, so-called, also are fully described in Chapter VII.

The methods of soil improvement in regard to actual plant food are said to consist first in the addition of substances containing plant food, and second, the addition of substances which may act upon the insoluble compounds present in the soil and render available the plant food they contain. In his treatment of this important subject of fertilizers and manures the author is in en-

tire harmony with the general view of agricultural chemists throughout the world.

Chapter IX, on the constitution of plants, deals with this subject in the usual manner. The value of the chapter consists in bringing into condensed form the more important principles relating to plant composition and especially with relation to the constituents which are withdrawn from the soil in the building of plant tissue. Chapter IX is devoted to the physiology of plant growth, and Chapter XI treats of crops in general and their relations to the farm. Chapter XII, as before stated, is related mostly to animal physiology.

The article on foods and feeding is a convenient summary of the matter contained in larger works on that subject, such as those of Henry, Armsby and Ware.

The articles on milk and milk-products are of special value to those engaged in the dairy industry.

The chapter on insecticides and other miscellaneous articles is also useful to the practical farmer.

While this little work does not pretend to contain anything original either in matter or arrangement, it gives, in a condensed and easily comprehensible form, the essence of the lectures delivered to agricultural students. Its doctrines are sound and the illustrations are for the most part apt. It is hardly a technical book, though somewhat too technical for the practical farmer, but will prove of use both in the classroom and on the farm.

H. W. WILEY.

AMERICAN HANDY BOOK OF THE BREWING, MALTING, AND AUXILIARY TRADES. BY ROBERT WAHL, PH.D., and MAX HENIUS, PH.D. Second Edition. Wahl and Henius, Chicago, publishers. Price, \$10.00 net.

This book of 1266 pages is divided into thirty-four chapters and an index. The first fifty pages are devoted to arithmetic and contain convenient tables of squares, cubes, and logarithms. Algebra, disposed of in the next five pages, is followed by chapters on mensuration, weights, measures, physics, mechanics, elements of machinery, power, transmission of power, steam-engines, refrigeration, pumps, brewery buildings, and a short chapter on chemistry. The matter presented in these chapters is introductory, and details are rigidly avoided, often at the expense of clearness. Thus the