"to classes of young men who intend to become farmers, and who desire information that will be of assistance to them in their profession." It aims to give "the principles of chemistry which have a bearing upon the conservation of soil fertility and the economic use of manures." The author has performed his task in a very satisfactory manner. He has treated the subject logically and systematically, giving first the scientific principles, and then laying stress on their practical application, but not to such a degree as to make the work a hand-book instead of a text-book. The historical development of the subject has not been neglected, though naturally the treatment has been very condensed.

Notwithstanding the general excellence of the work, there are certain errors and defects which cannot be overlooked. The language is, at times, too condensed for clearness, as, for example, in the description of the analysis of soils on page 74. The writer has a habit of leaving out the comma in sentences like these, 'that produced from cellulose bodies as sawdust,' 'produced by each material as green clover, oat straw.' It is stated on page 42 that "the additional amount of water in the humus soil may cause the soil temperature to be lower than that of the sandy soil. While the humus soil absorbs more heat than the sandy soil, the heat is used up in evaporating water." The heat is used up in warming the water, more than in evaporating it; the specific heat of soils being from 0.2 to 0.4, as stated in the next paragraph. On page 93 the statement is made that, "the non-nitrogenous compounds as cellulose, starch and sugar undergo a fermentation but seem to possess little, if any, power to form humates in the soil." And the third sentence reads, "straw, sawdust and sugar, materials rich in cellulose and other carbohydrates, yield a humus characteristically rich in carbon and poor in nitrogen." These statements appear inconsistent. The table on page 94 is not correctly arranged. On page 115 the statement is made, "like the nitrates and nitrites, the ammonium compounds are all soluble and hence cannot accumulate in soils which receive an average amount of rainfall." This leaves a false impression, for ammonium compounds are fixed by soils almost as readily as potash, becoming soluble with difficulty (1 part in 10,000 of water), while the nitrate and nitrites are not fixed, but wash out with great readiness. The fact that ammonium salts are fixed by the soils is not mentioned in the chapter on fixation.

This book is, on the whole a very good one; it is cordially recommended to the attention of all instructors in agricultural chemistry, and, while not written with this end in view, it is recommended to those agricultural chemists who desire to obtain a survey of the rapidly widening field of research relating to soils and fertilizers.

G. S. FRAPS.

A Short History of the Progress of Scientific Chemistry in our own Times. By WILLIAM A. TILDEN, D.Sc., F.R.S. Longmans, Green & Co., London, New York, and Bombay. Pp. x + 276.

The task which Dr. Tilden set before himself in the preparation of this book was to give in broad outline a sketch of the development of chemistry during the period of the Victorian era. The subject has been treated topically rather than chronologically, and the method of treatment chosen is abundantly justified in the result. The topics selected are: Matter and Energy; The Chemical Elements; Atomic Weights; Classification of the Elements; Valency and the linking of Atoms; Synthetical Chemistry; Stereo-chemistry; Electricity and Chemical Affinity; Liquefaction of Gases. An exhaustive historical treatment of these topics does not, of course, lie within the scope of the work. Indeed, its value depends very greatly on the fact that the author has known so well what to select, and because the topics selected have been treated with sufficient fullness to be interesting and intelligible to any one possessing an elementary knowledge of the subject. The book should find a large field of usefulness.

W. A. NOYES.

Outlines of Industrial Chemistry. By FRANK HALL THORP, Ph.D., Instructor in Industrial Chemistry in the Massachusetts Institute of Technology. A text-book for students. New Edition revised. New York, The Macmillan Company. 1899. Pp. xvii + 541. Price, $3.50.