very great interest. At present, and before we know the exact conditions under which the experiments were performed, it is impossible to form a correct judgment as to their value. The number of repetitions, and, in fact, all the details of the work, are needed in order to a just estimate of its correctness.

THE SCIENTIFIC PRINCIPLES OF AGRICULTURE.

UNDER the will of its founder, the Sherardian professor of botany in Oxford university was to hold also the Sibthorpian professorship of rural economy. The duties of both, but of the latter more particularly, were performed by Dr. Daubeny while he held this honorable post. His immediate successor, we suppose, gave his attention to the botanical chair; and the present incumbent, holding the ancient Sherardian professorship only, will doubtless give a fresh impulse to botanical study in the university. Under a chancery decree, the Sibthorpian professorship of rural economy is now independently established, and its duties defined "to lecture on the scientific principles of agriculture;" the amount of service is raised from 'one public lecture in each term' to twelve lectures annually; and Dr. Gilbert, for forty years the associate of Mr. Lawes at Rothamsted, and still so associated, was called to fill the chair. The continuous and well-concerted work done by these two men during the last forty or fifty years is now fairly well known and appreciated in all scientific circles; thanks, especially, to the extensive publication of a great part of the results in the Transactions of the Royal society. Mr. Lawes began his systematic investigations, we believe, while he was an undergraduate, more than half a century ago, by experimenting with manuring substances upon plants in pots; and when in 1834, on attaining his majority, he came into hereditary possession of the manor of Rothamsted, he at once set on foot the systematic experiments which are still in progress. It is understood that he has made ample provision for their continuance in the future. Although it could add nothing to his scientific fame, it was in fitting recognition of his services to his country that this inheritor of a handsome landed estate and a noble old manor-house was recently made a baronet. Equally fitting it is that Dr. Gilbert should now be called upon to present, in comparatively untechnical form, the general results and applications of his accumulated knowledge, and to inform the minds of those who will in great part become landlords, or country clergymen, or statesmen, to whom such instruction will form a proper and a very important part of a liberal education.

Dr. Gilbert's numerous scientific associates and personal friends in the United States, and not least those who had the pleasure of meeting him during his two visits to this country, while they read with interest the inaugural lecture delivered last spring, are hoping to have before them, in due time, the remainder of the course so happily begun, also its prospective continuation, to take the place in our day which was filled forty years ago by Johnston's lectures on agricultural chemistry and geology. 'A good deal has happened since then,' of which Dr. Gilbert can give excellent account. As an introduction to such an account, and to a popular exposition of the results attained during this interval, — much of it at Rothamsted, — nothing can well be more fit than this inaugural lecture. Agriculture is well said to be 'the concentrated production of food;' and the scientific principles upon which improvements in the art of concentrated production depend are drawn from the chemistry of the soil and atmosphere, and the chemistry along with the physiology of vegetation and of animal life. Of course, the subject will be treated by the present Sibthorpian professor from the chemical side. In this lecture the history of the subject is sketched from Saussure's analysis of plant-ashes in 1804, and Priestley's discovery of oxygen and of its liberation by growing plants, down to the researches of Liebig and Dumas, and ending with a sketch of the systematic field and laboratory work which has been carried on now for forty years by Sir John Lawes and himself. For the details of these prolonged experiments, and the full discussion of the results, see the elaborate memoirs published last year in the Transactions of the Royal society of London.

Introduction to the study of the scientific principles of agriculture: being the inaugural lecture delivered May 6, 1884, at the University museum, Oxford. By JOSEPH HENRY GILBERT, Ph.D., LL.D., Sibthorpian professor of rural economy, etc. 47 p. 8°.

CHADBOURNE ON INSTINCT.

PROF. P. A. CHADBOURNE'S Lowell lectures on instinct have reached a second edition; but the author has neither seen reason to alter the statements of the first edition, nor found time

Instinct: its office in the animal kingdom, and its relation to the higher powers in man. By P. A. CHADBOURNE. [Second edition.] New York, *Putnam's sons*, 1883. 323 p. 12°.