

furnish a faithful review of the most important research work accomplished during the year can only be justified on that condition.
H. M. D.

Observations Géologiques sur les Îles Volcaniques explorées par l'Expédition du "Beagle," et Notes sur la Géologie de l'Australie et du Cap de Bonne Esperance. Par Charles Darwin. Traduit de l'Anglais sur la Troisième Edition par A. F. Renard, Professor à l'Université de Gand. Pp. xxii+218; 14 figures, one plate. (Paris: Schleicher Frères, 1902.)

THIS volume is the first part of a French translation by Prof. Renard of the geological portion of the "Journal of a Naturalist," which book, as he remarks in his preface, preceded the "Origin of Species" by fifteen years and shows how surely Darwin had laid in his own mind the foundations for the development of that classic work. We should, indeed, have said that the geological observations proved at what a cost to this science the new birth of biology was obtained did we not remember that the idea of evolution has not only reanimated palæontology, but also has led to a new way of regarding even the inorganic world. Time has not deprived of their value those sections of "Geological Observations" which deal with St. Paul's Rocks, with the fluxional and spherulitic structures in the obsidians of Ascension Island, and with other volcanic islands and the order of eruptive rocks. They, indeed the whole work, can still teach geologists, and not only those who are beginners, the right methods in both observation in the field and the inductive treatment of facts; in a word, how to grapple with new problems. Prof. Renard's intimate knowledge, not only of geology, but also of the English language, so fits him for the work of translation that it is almost needless to say this has been admirably done, and he has added to the value of the volume by including in it the introductory essay which was contributed by Prof. Judd to the volume of the Minerva Library of Famous Books containing Darwin's geological works.

Galvanic Batteries: their Theory, Construction and Use. By S. R. Bottone. Pp. xvi + 376. (London: Whittaker and Co., 1902.) Price 5s.

ALTHOUGH the subtitle of this book indicates a comprehensive aim, it is only the construction of primary batteries that receives at all full treatment. In this respect the work is pretty thorough, since the author describes more than 200 different types of cell. The descriptions are short, but are supplemented in many instances by drawings, and should be sufficient to give any reader a clear idea of the essential features of the cell. Data as to the E.M.F., internal resistance and discharge are also given for a fair number of typical batteries. As a handy reference book to which one can turn for information of this sort, this volume should prove very useful, especially, perhaps, to the amateur or to the inventor who is anxious to see if amongst these 200 odd cells there is room for yet one more. From a scientific point of view, the work is disappointing; the tabulation of the different cells is not carried out upon any definite system of classification, so far as we can see, and the theoretical discussion in the first seventy pages is inadequate and unsatisfactory. It is hardly adequate, for example, only to describe the Grothuss theory (as modified by Clausius) and to speak of this as the "accepted theory of to-day." Again, the fundamental conceptions do not appear to have been clearly grasped by the author, who seems to think that energy and force are the same, and that electricity is a form of energy and may be defined as "a mode of motion in the atoms of bodies." We should not comment upon these errors in a work which is more particularly of a practical character did not the author claim in his preface that "the theory of the battery has been

carefully gone into." Should another edition be called for, we think Mr. Bottone would be well advised to omit the theoretical part altogether and confine himself to the careful tabulation of the cells; the information contained in the descriptive part must have needed considerable pains to collect and can hardly fail to prove useful.

The illustrations are, for the most part, clear; there are one or two minor errors, such, for example, as the misspelling of the names of Sir W. Thomson, Latimer Clark and Grothuss, which we should like to see corrected.
M. S.

The Elements of Agricultural Geology: a Scientific Aid to Practical Farming. By Primrose McConnell, B.Sc. Pp. x + 329. (London: Crosby Lockwood and Son, 1902.) Price 21s. net.

MR. PRIMROSE MCCONNELL is well known as a shrewd writer on practical farming and as one who has done a good deal to bring the facts of science within the reach of the farming community. The present work is on the fascinating subject of agricultural geology. It has evidently been written *con amore*, and we are told in the preface has occupied the author for many years. He treats first of the origin of soils, then follows a chapter on mineralogy, another on physiography and one on water supply. We then come to the most important section of the book, entitled "Formations and Farming," occupying about 110 pages. The volume closes with a section dealing with the evolution of the present breeds of horses, cattle, sheep and pigs.

The most valuable section, and the one containing most original matter, is that relating to formations and farming. We should much like to see this section greatly expanded and its very various subjects treated in full detail, and the whole accompanied by a good geological map of the United Kingdom, which the present volume, notwithstanding its high price, fails to supply. Such a work would be of standard value. Much of the rest of the volume has apparently been compiled from well-known text-books, references to which are freely given.

To the value of the central section we have already referred, but of the book generally we cannot speak so highly. The book has been loosely written, without much attention to scientific exactness, and hasty statements are from time to time made which require at least serious qualification.

The author views the soil as in every case the chief determining factor of agricultural results, whether relating to crops or animals, and a result is said to follow because the soil is Red Sandstone or Mountain Limestone. The considerable influence of varying climate in a country such as our own is seldom taken into account.

A Teacher's Manual of Geography to accompany Tarr and McMurry's Series of Geographies. By Charles McMurry, Ph.D. Pp. 107. (New York: The Macmillan Company, 1902.) Price 2s. 6d.

To teach successfully it is not only necessary for a teacher to have a good knowledge of his subject, but he should also know how best to present its parts to his class, and be familiar, in the case of subjects like geography, with the use to which the common objects of the neighbourhood of the school can be put in rendering lessons clear and interesting. This little book abounds in helpful hints to teachers of geography; it explains how the best results are to be obtained from school excursions, and it should convince the reader that geography is something more than topography, and should be made a means of arousing interest in such subjects as the formation of soils, the cause of scenery, and other changes which are too often ignored in school courses of geography.