

the excavating action of ice by the process of "plucking," in which "blocks of bed-rock, being partly surrounded by the ice, are forced from their bearings and rolled or slid forward" (p. 203). Evidences of marine submergence reaching up to at least 500 feet above present sea-level are described (p. 168), and it is surmised that local uplift may have taken place in the neighbourhood of the high mountains at a period later than the chief Pleistocene glaciation (p. 173).

The observations, admittedly scanty, on the coasts of Bering Sea, though indicating local glaciers of considerable magnitude, "seemed inconsistent with the theory of a continental glacier in the Bering Sea region" (p. 192).

The chapter (iii.) on "General Considerations as to Glaciers" formulates the elementary comparison between rivers of ice and rivers of water in the manner which American geologists have made customary. It contains also, among other suggestive matter, a novel discussion as to the effect of water in buoying up the ends of "tidal glaciers" when not deep enough to float them. The conclusion is reached "that there is no important difference, as respects pressure on the rock bed, between a glacier resting on the land and one which is partly bathed by the waters of a fiord" (p. 216), with the further significant deduction that the depth to which glacial troughs have been excavated is not demonstrative of a relatively low base-level at the time of their excavation (p. 217).

We have scanty space for the notice of the second of the volumes before us (vol. iv. of the series), which, however, is for the most part severely specialised. It consists of more or less independent contributions by several authors.

Prof. B. K. Emerson gives a general account of the geology of the places visited, with petrographical notes by Dr. C. Palache. The rocks described are mostly much altered by dynamic and thermal metamorphism, so that their age is often doubtful. They include old-looking gneiss, possibly pre-Cambrian; Carboniferous; Triassic or early Jurassic ("the Vancouver Series"); radiolarian chert perhaps Jurassic or early Cretaceous; and newer volcanic rocks.

Dr. C. Palache contributes some notes on the geology of the famous Alaska-Treadwell Mine of Douglas Island; a list of the minerals collected by the expedition; and a paper on the rocks of the neighbourhood of Chichagof Cove, in the Alaskan peninsula, where beds containing abundant fossils of Lower Eocene age were discovered, a period not previously recognised in Alaska. These fossils, which include our familiar *Venericardia planicosta*, are described and figured in a separate paper by Dr. W. H. Dall, who also describes some Pleistocene shells from Douglas Island.

Mr. E. O. Ulrich deals with the fossils of the Yakutat formation, which consist mainly of very curious casts, supposed to be fucoidal. A large number of these markings are named, described and figured, the beds containing them being assigned, on somewhat slender evidence, to early Jurassic, probably Liassic, times.

A collection of fossil plants of Upper Eocene age from Kukak Bay, on the Alaskan peninsula, forms the

subject of the contribution by Mr. F. H. Knowlton, with which the volume closes. Of the twenty-six forms represented in this collection, nine are described as new to science.

G. W. L.

JOSEPH PRIESTLEY.

Memoirs of Dr. Joseph Priestley. Written by himself (to the Year 1795), with a Continuation to the Time of his Decease by his Son, Joseph Priestley. Reprinted from the Edition of 1809. Centenary Edition. Pp. 132. (London: H. R. Allenson, 1904.) Price 3s. net.

THE story of the origin and history of this little book may be told in a few words. The greater portion was composed by the subject of it in the year 1787, when at Birmingham as minister of the New Meeting. Priestley's tenure of this office was rudely interrupted by the shameful and disastrous riots of July, 1791, when his house and laboratory, and much of his apparatus and library, were destroyed by the mob. Although many of his books and papers were burnt or otherwise made away with, the autobiography escaped destruction, and was ultimately recovered. Some years afterwards, whilst at Northumberland, in Pennsylvania, whither he removed in 1794, he resumed the story of his life, bringing it down to March, 1795, when he had completed the sixty-second year of his age. Although he lived nine years more, for the most part in fairly good health, it would appear that he added nothing to his account of himself, and it was left to his eldest son to continue his biography to the time of his death, and to see the work through the press. The first edition of the "Memoirs" was published by Johnson, of St. Paul's Churchyard, a staunch friend of Priestley's, by whom, indeed, the greater number of his works—educational, theological, and scientific—were issued. It was reprinted in 1833, on the occasion of the centenary of his birth, and it is again reprinted in commemoration of the centenary of his death.

The present edition differs from its predecessors in several particulars. It is not quite so sumptuously printed as that of 1806. It resembles the edition of 1833 in containing illustrations. In the book before us, however, these are more numerous and more interesting, from the circumstance that the reader is enabled to see in some measure what manner of man physically Priestley was at various periods of his career. Unfortunately the illustrations hardly do justice to the originals, and as process reproductions leave much to be desired. The frontispiece is taken from a copy of Opie's well known portrait, now, we believe, in the Manchester College, Oxford. The second portrait is a poor and partial reproduction of Fuseli's picture, painted for Johnson, the publisher, and one of the very few portraits which that painter made directly from a sitter. The original work was a full-length figure, and is interesting as showing Priestley at the period of his greatest scientific activity. It is interesting, too, as affording material for the statue by Stephens in the Oxford Museum, of which we have a picture in the book. The third portrait is

by Artaud, a painter largely employed by the Non-conformists of his day, and represents Priestley as he appeared at the time of his leaving England for America. The last portrait is by an American artist, Stewart, and shows Priestley without his wig, and in the costume he adopted at Northumberland. We have in addition a reproduction of Williamson's statue erected in Birmingham, and unveiled by Huxley in 1874 on the occasion of the centenary of the discovery of oxygen. Lastly, there is a copy of Drury's fine statue which Leeds owes to the munificence and public spirit of Colonel Harding.

The Rev. Mr. Freeston, who is responsible for the issue of the present edition, is, no doubt, a great admirer of Priestley as one of the chief apostles of Non-conformity, as the sturdy champion of Unitarianism and the resolute defender of free inquiry and liberal thought, and this circumstance may account for the fact that, in his selection of the illustrations, the scientific side of Priestley's activity receives practically no recognition. Dr. Taylor, of Norwich, who became head of the Warrington Academy, was no doubt an eminent divine, but his connection with Priestley was of the slenderest. Dr. Andrew Kippis was of some assistance to him at times, especially in the earlier period of his career. Dr. Price, whom he succeeded at Hackney, and the Rev. Mr. Theophilus Lindsey were almost life-long friends, and no doubt exercised considerable influence on his fortunes. But so did Josiah Wedgwood, James Watt, whose association with Priestley gave rise to the famous Water Controversy, Matthew Boulton, Keir, Withering, and other members of the celebrated Lunar Society. There can be little doubt that Priestley's career as a natural philosopher, and, indeed, as a political writer and reformer, was largely the result of his connection with Franklin, for whom he had the greatest admiration and affection, and to whom considerable reference is made in the "Memoirs." Lord Shelburne, too, with whom Priestley spent some of the most fruitful years of his busy life, afforded him, in ample measure, time, money and opportunity for the prosecution of his work on pneumatic chemistry, and thereby contributed to lay the foundation upon which his fame largely rests. But although portraits of these persons are at least as accessible as those of the worthy Nonconformist divines mentioned above, and should, in all fitness, appear in any edition of Priestley's "Memoirs" in which portraits of his friends and co-workers are made a distinctive feature, they are conspicuous by their absence.

The reproduction of the view of Priestley's birth-place at Fieldhead, near Birstall, presumably made from Mr. Buckton's photograph, is interesting and pictorially unobjectionable, but that of the Nantwich Meeting House, where Priestley officiated for about three years, is simply hideous. The only thing that can be said in its favour is that it is at least as meritorious as the architectural character of the building it seeks to depict. Nor is the view of the Old Academy at Warrington much better. Priestley was, no doubt, familiar with the old building on the banks of the Mersey, although his connection with it was as slender

as his association with its first head, Dr. John Taylor. Most of Priestley's life as a tutor at Warrington was spent in the New Academy, situated some distance from the building represented, and which, by the way, the author of the "History and Present State of Electricity" and of the "Essay on the First Principles of Government, and on the Nature of Political, Civil and Religious Liberty" would certainly not have recognised as here shown, mainly by reason of the imposing statue of the stalwart Cromwell and the large incandescent electric lamp which bulks so largely in the foreground. The fact is, the view represents the Old Academy as it exists to-day as the home of the Warrington Society, to the praiseworthy zeal and public spirit of which the old house has been rescued from the oblivion which was overtaking it.

We have no inclination to be hypercritical, but it is surely desirable that in the re-publication of a work which in its way may be reckoned as one of the classics of scientific biography, and is now brought out to commemorate the centenary of the death of its illustrious author, some effort should have been made to make the appearance of the book more worthy of its subject and of the occasion which has led to its re-issue.

T. E. THORPE.

A LADY ENTOMOLOGIST.

Eleanor Ormerod, LL.D., Economic Entomologist. Autobiography and Correspondence. Edited by Prof. Robert Wallace, Professor of Agriculture and Rural Economy in the University of Edinburgh. With portraits and illustrations. Pp. xx+348; plates xxx; text illustrations 76. (London: Murray, 1904.) Price 21s. net.

THE name of Eleanor Anne Ormerod will long be remembered for her unflagging industry and long-continued devotion to practical entomology, not surpassed in their own lines of research by Caroline Herschel and Mary Somerville, with whom she may most fittingly be compared. There can be no more fitting opportunity than the present to recall her services both to science and the world at large, when the Linnean Society (formerly so exclusive that ladies who contributed papers were not even admitted to be present when they were read) has just thrown open its full membership to women. The Entomological Society was never so exclusive; and at one time Miss E. A. Ormerod was one of the most regular attendants at the meetings, sometimes accompanied by her sister and fellow-worker, Georgiana E. Ormerod, and more rarely by some other lady friend.

By far the most interesting portion of this volume is the autobiography (occupying chapters i. ii.; iv.-x.). Next in importance are chapter iii., by Miss Diana Latham, referring to Miss Ormerod's early life, and chapter xi. by the editor completing (all too briefly) the biographical sketch of Miss Ormerod's life. A very full account is given of her family, surroundings and education, with reminiscences of coaching days, the Chartist rising, and other matters which look like ancient history now, besides occasional geological and