

survives, — the phenogamous part of it in only thirty-four species, — partly at some favored points near the sea, mainly in the higher and less accessible interior portions of the island. Of two or three of the trees or shrubs, only single specimens are known; while of the red-wood (*Melhania erythroxylon*, congener of the lost ebony, and no less valuable for the hard and durable mahogany-colored wood), which formerly abounded, only two indigenous trees survive, and hardly over a dozen planted ones.

Turning to the Bermudas, — the botany of which is exhaustively treated in the early part of the present volume, and, indeed, for the first time, — we have another example of the common fate of the aboriginal vegetation of small islands in low latitudes whenever opened to immigration. From the cultivated grounds, the indigenous vegetation is of course swept away: the uncultivated ground is covered with lantanas (here called sage-bushes) from the West Indies, and with oleanders from the Old World; also with an assortment of herbaceous weeds, some of American, but more of European, origin. The three shrubs above mentioned are said to cover more ground than all the native woody species put together. Yet the oleander was brought in only seventy years ago, the lantanas twenty or thirty years earlier.

But the change in Bermuda vegetation under human agency is by no means so striking and so pitiful as that which has happened to St. Helena. No peculiar type, and, it may be presumed, no species whatever, has here been extirpated. And that, because the Bermudas have no peculiar types, and probably never had any; and it is not improbable that the three or four species reckoned as peculiar may exist elsewhere. No genus, and hardly a well-marked species, would be lost if these little islands were submerged. Indeed, St. Helena and the Bermudas well represent the two classes of islands, the differences of which our author well describes. The first is an oceanic island, far separated by broad and deep seas from all continental land: its flora, therefore, in the main very peculiar and ancient, and the source of it wholly conjectural. Bermuda is of the continental class, is near to South America and the West Indies, from which it has obviously received its plants, and at a comparatively recent period. Like all such islands, its indigenous vegetation is meagre in kinds; and while 'the things themselves are neither rich nor rare,' it is not difficult to guess whence they came, and how they got there.

"The one striking feature in the softly undulating landscape is the ubiquitous cedar, re-

lieved here and there by clusters and isolated individuals of the palmetto." These are, indeed, the only indigenous trees in Bermuda. The palm (*Sabal Blackburniana*) is counted as endemic, yet with doubt whether it is not also West Indian. Its botanical history is curious, and is well worked out in this report; and so likewise of the cedar (*Juniperus Bermudiana*), which is also West Indian, and is very near to our common red cedar. Both trees appear to be in no danger of eradication; for they seed abundantly, and germinate freely.

The other insular floras, of which this volume collects and discusses the existing materials, are mainly those of Fernando de Noronha, Ascension, the Tristan da Cunha group, the Crozets and Kerguelen Island in the South Atlantic and Southern Oceans, Juan Fernandez and the adjacent Masafuera, near Chili, the South-eastern Moluccas, and the Admiralty Islands. Of all these, the historical and bibliographical data are carefully worked up, and the bearings of the facts upon the problems of distribution briefly indicated.

The appendix, on the dispersal of plants by oceanic currents and birds, is a full compilation of what is known respecting such dispersion, — at least, for the regions with which these reports are concerned. A list of plants, certainly or probably dispersed by oceanic currents, is given on pp. 42-44 of the Introduction. This introductory essay upon the characteristics of insular floras, with an analysis of some of them, is, perhaps, the most widely interesting portion of the volume. Mr. Hemsley tells us of his hopes, that Sir Joseph Hooker would have undertaken this; but his multifarious duties rendered it impracticable for him now to address himself to this subject, which he has formerly discussed in the most masterly way, and with the advantage of the largest personal experience. The actual author, although new to the field, has made a creditable essay.

A. G.

#### SOME WORKS ON GEOLOGY AND GEOGRAPHY.

THE early issue of a second edition of Geikie's *Geology* bears witness to the success of this excellent work. The author's preface states that it has been thoroughly revised, and that by abridgment when possible, and by use of a different type from that of the first edition,

*Text-book of geology.* By ARCHIBALD GEIKIE. Second edition, revised and enlarged. London, 1885.

*Physikalische geographie von Griechenland mit besondere rücksicht auf das alterthum.* By Dr. C. NEUMANN and Dr. J. PARTSCH. Breslau, Koebner, 1885. 476 p. 8°.

the contents of the volume have been much increased without adding seriously to the size of the volume. The references, which made so valuable and novel a feature of the original work, are also extended, and include material as fresh as the results of Peach's and Horne's studies in the Scotch Highlands, which are alluded to with admirable frankness, although going so counter to the author's earlier work and opinions. The wonderful epitome of historic geology presented in Great Britain renders illustrations from other countries much less necessary than they would be in any other region of the same area, so that the work is essentially and intentionally British in character; but the general discussions of the first two-thirds of the volume make it a standard of reference wherever geology is studied. Mentions of progress in this country are necessarily brief, but they are well chosen and appreciative, from Whitney and Wadsworth's 'Azoic system,' which is characterized as a 'full and pungent discussion,' to Chamberlin's report on the 'Terminal moraine,'—an 'admirable summary,' with which every student of glacial geology ought to make himself familiar.

The second volume of Günther's 'Geophysik' (Stuttgart, *Enke*, 1885) follows soon after the first, which was lately noticed in *Science*. The contents are, 'Terrestrial magnetism,' 'Atmospherology,' 'Oceanography,' and the unnamed physical study of the dry land. As in the first volume, the form of treatment embraces a history and discussion of every important question, with liberal references to the literature of the subject. Under many headings the discussion is necessarily brief, and serves hardly more than to open and close the question, without occupying a middle ground concerned with details of fact; but elsewhere, when dealing with matters in which scientific discussion is still active,—as the aurora, the colors of the sky, hail, sun-spot cycles, variation of sea-level, and others,—there is fuller consideration. The two volumes show a reading of most extraordinary breadth and critical power, and form a compendium that must be indispensable to teachers and advanced students.

Dr. Partsch has completed a work begun by his teacher and predecessor, Dr. Neumann; and the result of their joint labors makes a comprehensive handbook on the physical geography of Greece. Explorations in late years by Austrian geologists, have given much material for the description of its structural history, and the climatic chapter is made thorough by aid from Dr. Hann of Vienna. Santorin

receives a full account, although active volcanoes were not known in Greece at the time of its ancient flourishing. Earthquakes, on the other hand, have always been common, and the more important ones are described. Modern chronicles show certain periodicities in the occurrence of Grecian earthquakes; and this makes the loss of the ancient catalogue by Demetrius of Callatis all the more regrettable. Forel's ingenious explanation is quoted for the puzzling currents of Euripos; the six-hour currents at time of new and full moon depending on the tides from the larger basin to the south, the two-hour currents at time of lunar quadratures arising from the gentle oscillations (*seiches*) of the smaller basin on the north. A work of this monographic character is as interesting a task as the student can set before him. It brings him a wide range of acquaintance with writings on subjects allied to those he discusses, and in turn introduces him to a larger circle of readers than is attracted by most authors; and this is especially true when the task has been so well performed as in the volume before us. It is as useful to classical scholars and historians as to geographers and naturalists.

#### INFECTIOUS DISEASES.

THE recent rapid revolution in medical theories regarding the nature of a large group of diseases, has made antiquated the books which only a short time ago were quoted as high authority. A new text-book, therefore, by so able and polished a writer as Professor Liebermeister, must be a welcome contribution to the library of every medical student. The first volume is devoted to that group of diseases upon which is riveted the attention of all sanitarians, as well as physicians, at the present time. It deals with the infectious diseases, and the story of the hidden mysteries of this strange world of minute germs is told in a fascinating manner.

The word infection was originally applied to every form of poisoning; but it is now restricted to the pollution of the body by a special kind of poison, which has the property of reproduction and self-multiplication to an indefinite degree under favorable conditions. This power of multiplication has long been recognized in certain diseases, and has in former times led to the suspicion that the poison of those diseases consisted of particular living entities; and recent investigations have

*Vorlesungen über specielle pathologie und therapie.* Von Dr. C. LIEBERMEISTER. Leipzig, *Vogel*, 1885. 8°.