

high frequency current for laboratory use, for making cut-out switches, for producing alternating current having a special wave form, and for making measurements of very small alternating currents.

In the book under notice, mercury arc and mercury jet rectifiers are fully described. In addition we have good descriptions of contact, thermionic, electrolytic, and gas discharge rectifiers. In describing their action it is necessary to explain the many physical processes involved, and to get numerical relations advanced, mathematical theorems have to be employed. The author has done excellently in the space at his disposal, and the full bibliography given at the end of the book will be a great help to the researcher who wishes to probe more deeply into the subject. A list is also given of the patents which have been taken out for rectifiers, beginning with the aluminium condenser patented by Siemens and Halske in 1901.

The Theory of Electrical Artificial Lines and Filters.

By A. C. Bartlett. Pp. ix+155. (London: Chapman and Hall, Ltd., 1930.) 13s. 6d. net.

ALL engineers who are engaged in one or other of the numerous branches of electrical communication should know something of the theory of 'repeated' networks. These networks occur in artificial transmission lines, in line balances, in filters, and in phase shifters, all of which are of increasing practical importance. This book gives a very good account of the mathematical theory of these devices. Fifty years ago it was not uncommon for physicists to consider that the theory of numbers and subjects like determinants and continued fractions might well be omitted from a scientific or engineering curriculum. This book shows that it is lucky these ideas did not prevail. The theory of determinants—the author quotes Muir's "Theory of Determinants" as a book that should be consulted—is specially useful.

The generalised 'ladder artificial line section' is best solved by using continuants, a special form of determinants.

The methods of solving difference equations are also very useful in finding solutions of the physical problems involved in these networks. The author states that the literature of the subject is now so vast that he made no attempt to give a bibliography. From the engineer's point of view, however, it would have been helpful to give references to some of the classical papers.

Geology.

Geologisches Wanderbuch der westlichen Dolomiten.

Von Dr. Maria M. Ogilvie Gordon. Pp. xv+258+3 Tafeln. (Wien: G. Freytag und Berndt A.-G., 1928.) 15 gold marks.

DR. OGILVIE GORDON'S monumental treatise on the geology of the western Dolomites (see NATURE, vol. 121, p. 83; 1928) has been followed by the guide-book now under review. The region is famous for the beauty of its scenery, and is visited annually by many thousands of tourists; to the geologist it is of exceptional interest, as is evidenced

by the numerous classical localities (St. Cassian, Heiligkreuz, the Marmolata, the Schlern, the Seiser Alpe, etc.) that lie within it. The picturesque jagged ridges and peaks and the elevated plateaux are formed by the various dolomitic stages of the Upper Trias, while the lower stages of the Trias and the underlying Permian may be well studied on the mountain sides. Other formations are of more restricted occurrence, but Jurassic rocks are found here and there, and the Neocomian beds of the Puez Alpe, in particular, are well worth a visit. The tectonics have not the bewildering complexity of many other Alpine regions, but nevertheless present many features of interest.

The first part of the book contains a useful summary of the stratigraphy and tectonics, and is illustrated by three plates of fossils. The area is then thoroughly explored in thirty-two excursions, each occupying a full day or rather less. Most of these follow the usual marked mountain tracks, and, if equipped with a large-scale topographical map, the geologist should have little difficulty in finding the way and in locating the exposures described. No particular experience in mountaineering appears to be called for except perhaps in the excursions to the Marmolata and the Sella group. Numerous vertical sections and excellent photographs illustrate the text, while the author's detailed geological map of the area between the Fassa and Gröden valleys is inserted in a pocket at the back of the book. The profuseness of its illustrations must be held responsible for the rather high price of this work. It will undoubtedly prove a most instructive and trustworthy guide to the geology of the region.

A Textbook of Geology. Part 1: *Physical Geology*, by Prof. Louis V. Pirsson; Part 2: *Historical Geology*, by Prof. Charles Schuchert. Part 1. Third edition, revised by Prof. William M. Agar, Prof. Alan M. Bateman, Prof. Carl O. Dunbar, Prof. Richard F. Flint, Prof. Adolph Knopf, Prof. Chester R. Longwell; revision edited by Prof. Chester R. Longwell. Pp. vii+488. (New York: John Wiley and Sons, Inc.; London: Chapman and Hall, Ltd., 1929.) 18s. 6d. net.

PIRSSON'S "Physical Geology" has deservedly been one of the most successful geological text-books during the last decade, although, like its many competitors, it had its weaknesses. Many of these are now removed from the very thoroughly revised edition that has recently appeared. The awkwardness of treatment involved by the former twofold division into dynamical and structural geology has been avoided by abandoning these divisions and changing the order of presentation. The treatment of stream erosion now emphasises the cycle of erosion for both humid and arid climates, and there is a new chapter on land forms in which the relations between landscape and geological structure are systematically and adequately dealt with. The chapter on volcanoes suffers from the absence of any reference to the work of Day, but is otherwise a well-written general account. The outer 2000-mile shell of the earth is regarded as 'solid', whereas the seismic evidence merely indicates that