

as to the distribution and character of the main earth-forms. He divides them into three main groups; the Epeirogens are the continental areas; the Orogens are the mountain bands, in which he includes all the North Atlantic, the western part of the Southern Ocean, and the south-western part of the Pacific. His third group includes the Pelagogens, or the areas of the Pacific, South Atlantic, and Indian Ocean which he regards as having been permanent. All the eastern Pacific, he considers, has been an ocean since the pre-Cambrian, and he supports this view by the opinion of Holdhaus that the insect faunas of the Polynesian islands are oceanic—a conclusion rejected by other authorities on the entomology of that region.

Most of the present part is occupied by summaries of the geology of the Pacific Ocean and its islands, of the Australonesian Orogen, based largely on Stanley's works on New Guinea, and by accounts of New Zealand, Australia, and the Antarctic continent and islands. The chapter on India is begun. The author has visited Australia, and his chapter on the Australian region shows general recognition of the predominant influence of block-faulting and of the Great Valley of South Australia as a rift valley. Prof. Schaffer briefly considers the artesian basin of east-central Australia and accepts the view that the wells are discharging an accumulation of fossil water or of magmatic water, and he remarks that many of the wells have already shown a great decline in productivity. In the account of New Zealand he tabulates the classifications of Park, Marshall, and Morgan.

Chemistry.

A Comprehensive Treatise on Inorganic and Theoretical Chemistry. By Dr. J. W. Mellor. Vol. 11: *Te, Cr, Mo, W.* Pp. xii + 909. (London, New York and Toronto: Longmans, Green and Co., Ltd., 1931.) 63s. net.

THE eleventh volume of Dr. Mellor's "Comprehensive Treatise" includes the element tellurium, held over from the previous volume on sulphur and selenium, and the half-brothers of the oxygen family, chromium, molybdenum, and tungsten, but without uranium. All these elements raise interesting problems of valency; but the section on the valency of tellurium is unfortunately already out of date, since the evidence cited on p. 32 for the coplanar configuration of the four radicals in the telluronium salts has been obsolete since the end of 1928, whilst positive evidence of the tetrahedral configuration was provided at the end of 1929. The chromium amines are catalogued with characteristic thoroughness under ninety sub-headings, and stereo-isomerism is suggested as a possible explanation of the existence of multiple forms of certain members of the series, but the index contains no references by which general phenomena, such as co-ordination, isomerism, or stereo-isomerism, can be discovered. On the other hand, the interesting oxy-salts, which are so characteristic of this family of elements, can be traced

quite readily by referring to entries under chromyl, molybdenyl, and uranyl compounds.

As his task approaches completion, however, it becomes increasingly clear that Dr. Mellor's principal achievement is to provide a monumental index to the literature of inorganic chemistry during the preparative period of its development, and thus to ensure that nothing of importance is lost or permanently forgotten. This programme calls for page after page of closely packed references and a highly condensed text, with the result that the more modern problems of valency and chemical properties in their relation to the electronic structure of atoms and molecules must necessarily play only a subsidiary part in the scheme. The treatise is therefore, in the main, a record of detailed facts accumulated during a century of arduous work, and the author is to be congratulated on the inclusion of so many recently acquired details, for example, of crystal structure, rather than to be criticised for the fact that these are scattered at such distant intervals amongst the results of earlier work.

Fundamentals of Organic Chemistry. By Prof. Harry F. Lewis. (International Chemical Series.) Pp. viii + 390. (New York: McGraw-Hill Book Co., Inc.; London: McGraw-Hill Publishing Co., Ltd., 1930.) 13s. 9d. net.

In the preface to this book, the author directs attention to the lack of a recent American textbook of organic chemistry based on what he calls the "Atomic Linking Theory". This somewhat misleading expression is intended to denote a theory based upon the Lewis-Langmuir conception of electronic linkages rather than upon the mere spatial orientation of the molecules as developed from the work of Kekulé, van 't Hoff, and others. But the author soon encounters difficulties, and on page 10 he confesses that "the arrangement of electrons in ethylene and acetylene is not well understood". He is therefore obliged to fall back upon a study of old-fashioned linkages and groupings, and abandons the idea of discussing electronic linkages. Very little stress is laid, however, upon the use of three-dimensional formulæ and the description of optical activity is rather inaccurate. Thus the expression "straight chains of carbon atoms" is used, and an optically active compound is described as one "having the property of bending the plane of polarised light". The chapter on the characteristics and analysis of compounds is a mere outline and would be more useful if it were illustrated with diagrams.

Nevertheless, the book has some good features. Thus, in many of the problems set, reference to original papers is necessary in order to obtain numerical data, which are to be used in plotting graphs, and the student acquires the habit at an early stage of consulting the original records. Emphasis is also laid upon technical developments of recent date, for example, new fermentation processes, new methods of cracking hydrocarbons, the catalytic oxidation of naphthalene, and technical applications of Friedel and Crafts's reaction. Many illustrations of plant are given.