

Juan Teotihuacan. It is needless to point out that this publication could not have been compiled had the places never been surveyed and described by other explorers. Mr. Holmes frankly admits that his work is no more than a sketch of the sites he visited "seen at a passing glance"; but even regarded merely as an introduction to the study of Mexican archæology, its value to the student would have been much increased by the inclusion of references to the extensive literature on the subject, and by a discussion of the work accomplished by previous explorers and archæologists.

#### OUR BOOK SHELF.

*Manuale del Chimico e dell' Industriale.* By Prof. Dr. Luigi Gabba. Pp. xvi + 442. (Milan: Ulrico Hoepli, 1898.)

*La Fabbricazione dell' Acido Solforico, dell' Acido Nitrico, del Solfato Sodico, dell' Acido Muriatco.* By Dr. V. Vender. Pp. v + 312. (Milan: Ulrico Hoepli, 1898.)

*Leghe Metalliche ed Amalgame.* By I. Ghersi. Pp. xii + 431. (Milan: Ulrico Hoepli, 1898.)

THE three volumes, the titles of which are given above, belong to an extensive series of manuals published by the firm of Hoepli, Milan. More than five hundred of these Manuali Hoepli have now been published, covering a variety of subjects in science, letters, arts, and industries.

Prof. Gabba's volume is a collection of tables of physical and chemical data, and of analytical processes, for the use of analytical and technical chemists, directors of chemical works, students of chemistry, and others. The tables and the descriptions of methods of detecting various substances, and of carrying out a complete analysis or assay, will be found very serviceable to all technical chemists. The volume contains a mass of physical and chemical data, and it will prove as useful to analysts as engineering pocket-books are to engineers.

Dr. V. Vender's work on the manufacture of sulphuric acid, nitric acid, and hydrochloric acid, presents in a concise form the essential facts of these great chemical industries. In the case of each product, the substances employed in its manufacture, the general principle of the manufacture, the theory of the various processes, the details of construction of the plants in use, and methods of analysing the products, are described. The book is instructively illustrated; and though the text is in Italian, English chemists will find that they can read it by occasional reference to a dictionary.

In the third of Hoepli's Manuals referred to at the head of this notice, Signore Ghersi provides metallurgists with a handy book on metallic alloys and amalgams. The volume opens with a description of alloys in general, and then deals in succession with binary alloys, alloys of aluminium with common metals, nickel alloys, amalgams, alloys of gold, silver, and platinum, alloys for coinage and medals, bronzes, brass, ternary and quaternary alloys, Delta metal, fusible alloys, alloys which simulate various metals, and solders. There is an appendix containing useful tables of physical and chemical data referring to alloys, a long list of works cited, and a good index. The author frequently refers to recent investigations of metallurgists in various parts of the world, and his book does credit to him and to the scientific spirit in Italy.

*Lectures on Quaternions.* Part i. Introductory. By S. Kimura, Sendai, Japan.

WE are unable to read this treatise, because it is printed in Japanese. The mathematical formulæ and woodcuts

show that the author is introducing his students to those elementary geometrical (curve and surface) illustrations of the vector calculus (mainly vector addition and differentials) which may be taken up without any knowledge of a quaternion. The characters are printed in horizontal rows instead of the usual vertical columns, and this might be taken as the text for a sermon on the modern changes in Japan. The concession is necessary if a student is to read mathematical formulæ with ease, yet it is one which need not alarm the scholars, and by making it the author takes away an objection to the use of Japanese characters, and so keeps his reader in touch with Japanese literature. Every Japanese reader of such a treatise is well acquainted with English, and if the teaching of mathematical science were to be considered by itself, all such books might just as well be printed in English. But it is well known to all who have studied the Japanese that they are not merely studying our commercial and military and scientific ideas, but how they may assimilate these ideas without undue hurt to their own old civilisation and developed instincts and fine moral character, which seem to them, and indeed to some of us, of a very much higher order than what we find in Europe. Well, the vector calculus can do little harm to anybody; but when Part ii. is published, and the author introduces his quaternions, he may be glad that the old scholars who protect the morals of his country are unable to understand what he is writing about. J. P.

*Lehrbuch der Erdkunde für höhere Schulen.* By Dr. Willi Ule. I. Theil (Für die unteren Classen). Pp. viii + 176. (Leipzig: G. Freitag, 1897.)

THIS is an excellent reading-book for children, but as it is printed in the German language, it will not be found very useful this side of the Channel. Written in a very simple manner, and dealing only with fundamental ideas, the author describes clearly and concisely the main physical features of the earth—such as mountains, plains, continents, races, &c. Each of the different countries is generally described, and typical illustrations are inserted here and there. Several paragraphs are also devoted to brief general descriptions of the weather, climates, elementary astronomical phenomena, map-drawing, &c. The author has succeeded in bringing together in a methodical and natural sequence a great amount of information which the children will read with delight. Names and numbers have been suppressed as far as possible in the text, these being added in tabular form at the end of each section, more for the use of the teachers than for the readers.

*The Great Meteoric Shower of November.* By W. F. Denning, F.R.A.S. Pp. 52. (London: Taylor and Francis, 1897.)

UPON the subject of meteor-observation, Mr. Denning teaches "as one having authority, and not as the scribes." This pamphlet, reprinted from the *Observatory*, furnishes meteoric observers with a number of interesting facts as to past November showers of Leonids, and prospects of observations between now and 1905. Mr. Denning deals in succession with the position of the Leonid radiant, the character of the radiant, the visible aspect of the individual Leonids, the real paths of the meteors in our atmosphere, minor meteor showers visible at the Leonid epoch, expected phenomena at the ensuing return, the observations required, and the November shower from Biela's comet. Every astronomical observer should possess a copy of the pamphlet, for the perusal of it will show him exactly what points require attention, and will thus increase the value of his observations.