

appendices, which include an extensive catalogue of the literature on the subject of primæval man, will be found to contain a large amount of useful information.

J. E.

Metallurgia dell' Oro. By Ing. Emilio Cortese. Pp. xv+262; 35 incisioni. (Milano: Ulrico Hoepli, 1904.) Price 3 lire.

Metalli Preziosi. By Ing. A. Zinone. Pp. xi+315. (Milano: Ulrico Hoepli, 1904.) Price 3 lire.

NOTHING exactly resembling the Hoepli manuals is published in the English language, though in French the "Encyclopédie scientifique des Aide-Memoire" constitutes a close parallel. The Hoepli series now amounts to 800 little volumes dealing with science, literature, and the fine arts. The method of publishing is useful, and contrasts favourably with the inconvenient system adopted in the old-fashioned encyclopædias with large volumes containing heterogeneous congeries of subjects. The latest additions to the series are neatly bound, well printed with good sized type, and can be carried in the pocket. The book on the metallurgy of gold contains brief accounts of the washing and sluicing of auriferous gravels, and of the crushing and amalgamation of gold ores. There are also chapters on the Plattner and Mears processes of chlorination, on cyaniding, and on the refining and parting of gold bullion. The descriptions are fairly clear and accurate, but some of them deal with antiquated processes. The Newbery-Vautin process, the Crauford mill, and Greenwood's electrolytic process are all described, but on the other hand no mention is made of the use of the lead-zinc couple in the precipitation of gold from cyanide solutions, or of Taverner's lead-smelting process. In the other book, the metals dealt with are silver, gold, and platinum. The properties of these metals and their alloys, and the methods of assaying and treating their ores are briefly described, and the remaining eighty-five pages of the book are devoted to the uses of gold and silver in the arts. Both volumes are supplied with a complete table of contents, but suffer from the absence of indexes.

The Telephone Service: its Past, its Present, and its Future. By H. L. Webb. Pp. 118. (London: Whittaker and Co., 1904.) Price 1s. net.

AN interesting description of the general working of the modern city telephone system is given in the pages of this book. No attempt is made to describe the power plant of the modern telephone exchange, or the details of other parts of the machinery by which an efficient telephone service is maintained, but the general principles of this means of communication are clearly explained, and suggested developments of telephone policy in Great Britain are discussed. Every subscriber who reads the book will be given an intelligent and tolerant view of the telephone service.

LETTERS TO THE EDITOR.

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Magnetic Disturbances and Navigation.

CAN the compasses of modern ships be influenced by magnetic disturbances to such a degree as to imperil navigation? The disaster which on the morning of June 28 befell the Danish s.s. *Norge*, and by which about 600 lives were lost, ought, in the opinion of the present writer, to bring this question to the front. The course of the ship should take her about 25 miles south of Rockall. The last

observations, by which position, deviation, and the absence of current were ascertained, were made only twelve hours before the ship struck, and showed nothing extraordinary. It seems impossible to explain the discrepancy between the real position and that of the reckoning on the morning of June 28 without assuming a sudden and considerable alteration of the deviation on the compass.

This view is supported by communications, called forth by the disaster, from two captains, who have, or at any rate think they have, directly observed such alterations. The communications run as follows:—

(1) "A few years ago I (Captain Hveysel, s.s. *L. H. Cari*) was on a voyage from the United States of America to Denmark, following the great circle from Newfoundland to Pentland Firth. About 200 miles west of Rockall I had the position at noon accurately determined by observations of the sun, but as the sky was clear in the dusk, I determined anew the latitude, as well as the longitude, by stellar observations, and found to my astonishment that the ship had gone forward in a direction about 1 point more southerly than calculated according to the reckoning. By observation of the pole star it was in fact ascertained that both the compasses of the ship had acquired a hitherto unknown easterly deviation of 10° to 11°. The weather was fine, but a faint northern light was observed, which I supposed to be the cause of the magnetic disturbance. The course was shaped in accordance with the new deviation, but I continued to take the bearings of the pole star, and towards midnight the compasses were observed to return to their normal deviation, while the aurora disappeared."

(2) "I, Captain F. W. Horner, master of the s.s. *Elixir* of West Hartlepool, while on a voyage from Port Inglis, Florida, to Linham, Sweden, between noon June 24 and noon June 25, in the vicinity of the Island of Rockall, found by observation of the sun that the deviation on the compasses had changed 9°, whereby my ship had gone 25 miles out of her course to the north. I was steering to pass 20 miles north of Rockall, and found by observation at noon June 25 that I had passed 45 miles north of it. After passing through the Pentland Firth the compasses again returned to normal."

This last observation has a special interest as relating to the immediate vicinity of Rockall; and to about the same time as the shipwreck of the s.s. *Norge*. Can any of your readers furnish facts of a similar nature?

So far as I have been able to ascertain, disturbances of the declination needle of like duration and intensity are completely unknown, but, to my mind at least, compasses, mounted in steel ships and compensated by powerful magnets, cannot be directly comparable to the needles of a magnetic observatory. Is it possible to explain such temporary deviations of ships' compasses, as appear to have been observed in the cases related above, from the known variations of the earth's magnetism?

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The Great Red Spot on Jupiter.

OWING to very ill-health, I have not been able to make observations of Jupiter during the last few weeks, but have been interested in receiving the results of some other observers. It appears that the great red spot is rapidly accelerating its motion, so that its longitude is decreasing, and with a continuation of this behaviour the spot will ultimately correspond with the position of the zero meridian of system ii. of Crommelin's ephemerides. The present longitude of the marking is about 25°, which is the same as it was in the summer of 1898, so that the mean period of rotation during the last six years has been identical with the rate of system ii., viz. 9h. 55m. 40.63s.

The variations in the velocity of the spot during the past few years have exhibited a curious oscillation, and it will be important to watch the future developments of the object. It would be interesting to see in NATURE during ensuing months some reports from observers as to whether this singularly durable marking maintains its present rapid westerly drift.

W. F. DENNING.

Bristol, September 12.