

THURSDAY, NOVEMBER 12, 1908.

## A HISTORY OF THE EARTH.

*Geschichte der Erde und des Lebens.* By J. Walther. Pp. iv+570; with 353 illustrations. (Leipzig: Von Veit and Co., 1908.) Price 14 marks.

PROF. WALTHER'S history of the earth and of life has been written with that combined knowledge of physical geography, stratigraphy, astronomy, and biology which we have learnt to expect from the author's previous writings. He tells the story of the earth in a series of chapters which have the interest of essays instead of the compressed information of a text-book, and are rich in fresh observations made by the author or culled from recent technical literature. The volume is remarkably well illustrated. One feature of the illustrations is the abundance of drawings showing extinct animals reproduced as in life. There are also numerous pictures of ideal landscapes and seascapes, drawn in accordance with most recent knowledge. Such, for example, is the terrifying picture of *Cocosteus decipiens*, by Rudloff, after a reproduction by Jaeckel, the beauty competition between Rhamphorhynchus and Archæopteryx on the shores of the Solenhofen lagoon, and the race between two flying Pteranodons, which, as they had a body weighing only 15 kilograms to a wing span of 18 feet, resemble a modern aeroplane with its small motor and vast sails. The views include pictures of life on the sea floor in two epochs of the Cambrian period, and one of a Calamite forest in the Carboniferous, by Rudloff, from designs by Walther. The illustration of Dinornis is, however, somewhat out of date, as the bird's title to its specific name of maximus is due more to the artist than to nature.

The book begins with a series of chapters on the physics of the earth, which the author describes as composed of five zones. For the central mass he adopts the name of pyrosphere, and to the zones usually accepted he adds the biosphere, which he separates from the underlying lithosphere, owing to the wide area occupied by coral limestones and forests. The author then discusses the relations of the earth to other heavenly bodies, and he enters a welcome and emphatic protest against the continuance of describing the ring-shaped mountains of the moon as volcanoes. He, however, accepts Dr. G. K. Gilbert's theory that they are due to meteoric masses which were fused by collision with the moon and spread out as a ring around the point of impact.

We also welcome his view, which he repeats from his paper of 1903, that the development of the deep oceanic basins began at the close of Palæozoic times, so that the modern abyssal oozes are not to be expected in the Palæozoic rocks. The book includes a map showing the supposed wanderings of the North Pole, and discusses the shifting of the pole as the possible cause of climatic changes; the fact is admitted, however, that this movement of the pole has not been proved for any geological period.

The author also refers to various attempts to

express geological time in years, and in this matter does not seem very hopeful of satisfactory results. He quotes estimates of the age of the earth, from the 20 million years of Lord Kelvin to the 100 to 180 million estimate of Sir Archibald Geikie. He caricatures one line of argument by remarking that because one man can build a wall in 100 hours, it does not follow that 360,000 builders could build the same wall in one second. He gives a photograph of a lump of coral 8 centimetres high, which had grown in four years on a telegraph cable, and he argues therefrom that a layer of coral limestone 600 metres thick could have been deposited in 30,000 years, an unconvincing argument, owing to the difference in texture between a branching coral and a massive coral rock.

The section of the work devoted to stratigraphical geology the author calls "Bathrologie," which describes each geological system in reference to its most striking geographical character, such as the great northland of the Old Red Sandstone, the *Productus* Sea of the Carboniferous, the continent of Gondwanaland, the Triassic Sea and its struggle with the northern deserts, the Jurassic Sea, &c.

In his geological classification the author adopts one view which will probably not meet with general acceptance, for he groups together the Algonkian and the Cambrian as one group, the Urzeit; the systems from the Silurian to the Permian inclusive he calls the Alt-zeit. Considering the great unconformity and complete palæontological difference between the Algonkian and the Cambrian, and the uncertainty as to the dividing-line between the Cambrian and the Ordovician, the separation of the Cambrian from the rest of the Palæozoic is unnecessary.

In his interesting chapter on prehistoric man the author figures some eoliths from the Miocene; he regards these stones as showing artificial workmanship, and remarks that they have not been found associated with broken bones or any other signs of the contemporary existence of man. The author is probably only logical in his conclusion that, if the eoliths are of human origin, then the age of man must be extended back at least to the Miocene, and probably to even much earlier geological periods.

One mistake may be noted, as it has occurred in other text-books. On p. 132 it is stated that the Pink and White Terraces of New Zealand were destroyed by an earthquake, whereas they were blown to fragments by a volcanic explosion that left a vast crater deep below their site.

J. W. G.

## SCIENCE AND THE DAILY PRESS.

*From an Easy Chair.* By Sir E. Ray Lankester, K.C.B., F.R.S. Pp. viii+144. (London: A. Constable and Co., Ltd., 1908.) Price 1s. net.

SCIENCE renders the people a three-fold service. The increase in material comfort and in facility of communication which have resulted from ability to direct the forces of nature have been sufficiently proclaimed by public speakers and acclaimed by their hearers. It is less clear that the public recognise the