

Huxley to Haeckel, and the present work is an "Haeckelismus" without the redeeming grace of genius. It is dogmatic, and, still worse, it is dull.

The question of the origin of life is easy to the author. Scattered through infinite space and time is carbon, which in its original state forms the simplest germs of life (Zoatoms). These are so small that even under the highest magnification they are seen only as an irresolvable dust. It is they alone which are able to assimilate the carbon which has lost its life (we are not told how it loses its life). When the earth was molten the Zoatoms surrounded it like an atmosphere, like the meteorites around a heavenly body. Then, of course, come Protists, Protophytes, and Protozoa, and all is plain sailing until we reach the commencement of the Cambrian, where we, for the first time, encounter fossil remains; not, however, representing, as we might expect, the beginnings of life, but all, or almost all, the great subdivisions of the Invertebrata. This remarkable fact has taxed the ingenuity of geologists not a little; the author makes short work of it; two or three pages are devoted to describing the various kinds of rock metamorphism, one or other of which is asserted to have blotted all the pre-Cambrian fossils out of existence, except Eozoon, which is most likely a Stromatopora-like organism, saved by a strange chance from destruction.

Geologists, the author says, have spoken of a Carboniferous continent—Glossopteris land; this is "grund falsch," and contradicted by the facts (which are not cited).

The notion of pre-Tertiary glacial epochs is widely accepted by geologists, but it is "grund falsch" and "unthinkable." A deep sea before the Triassic period is also "unthinkable." No climatic zones were "possible" before the Tertiary era.

The profile of the Pithecanthropoids is still *very* ape-like, as is seen in the lowness of the forehead, the projecting jaws and retreating chin, the slope of the occiput, and the size of the face. (This statement is arrived at by piecing together Neanderthal man and Pithecanthropus.)

After all this, we are glad to be assured that the soul is immortal; it resides in the Zoatoms, and so may be dispersed, but not destroyed.

There are several references in footnotes, almost without exception to other works by the author.

#### OUR BOOK SHELF.

*Grundlagen der Ballonführung.* By Prof. R. Emden. Pp. vii+140+Taf. 3. (Leipzig and Berlin: B. G. Teubner, 1910.) Price 2.80 marks.

THIS book contains twenty-two paragraphs or chapters. It opens with a statement of the general laws governing the relations of a balloon to the air which supports it, beginning with the density of the gases employed and their lifting forces, and proceeding with the consideration of the distribution of force in the envelope.

Balloons are classified by the author as being of constant mass or constant volume (*i.e.* as having closed or open envelopes), and the behaviour of the classes in rising and falling is discussed.

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The proper use of ballast is treated, and the importance of having too much ballast rather than too little is emphasised. Paragraph 18 deals with captive balloons, especially with regard to the height to which they can ascend in a wind. The diagram illustrating this point appears to be wrong, the construction employed indicating that the height in question is  $L(1-\cos \alpha)$ , where  $L$  is the length of the rope and  $\alpha$  its inclination to the vertical, instead of  $L \cos \alpha$  (as it should be).

The subsequent paragraphs are connected with the use of the ballonnet and the relative merits of closed and open envelopes, and, finally, in paragraph 22 some remarks are made on the steering of dirigible balloons.

There does not appear to be much that is new in the book, but it has the merit of being compact, and most of the information it contains appears to be correct.

For how long frail structures such as balloons will have a place in warfare when opposed to the hardier, cheaper, and quicker flying machines is a question which will be decided in the next few years, but for so long at any rate Dr. Emden's book will be found useful.

A. MALLOCK.

*Vaccine Therapy: its Theory and Practice.* By Dr. R. W. Allen. Third edition. Pp. x+277. (London: H. K. Lewis, 1910.) Price 7s. 6d. net.

THE principle of treating bacterial infections by vaccines, *i.e.* sterilised preparations of the organisms which are disturbing the normal balance, has taken firm hold in modern English medicine. It has not reached its present position without a struggle, and even now it must be admitted that the proof of its usefulness depends more on the cumulative weight of personal impressions than on any rigid demonstration such as an extensive case-statistic would supply. In practice, however, an increasing body of influential opinion is in its favour, and the acceptance with which former editions of this work has been received shows that it meets a demand.

The present issue, which has been entirely rewritten, aims at "enabling the general practitioner to approach with confidence a case requiring therapeutical immunisation." With this object a sketch is given of the nature of opsonins, the use and meaning of the opsonic index, and the method of preparing vaccines, while the various infections are treated at somewhat greater length with regard to their special requirements. A considerable number of individual cases is given to illustrate the selection of appropriate doses, and the results which may reasonably be expected from them in different circumstances. These include failures as well as successes, and the results of recent work in this country are summarised as fully as the scope of the work permits.

As the author himself recognises, however, accurate diagnosis is a prime essential of success, and this presupposes an acquaintance with practical bacteriology, which the general practitioner does not possess, and such a book as this can do little to supply. Some space indeed might well have been saved by omitting the altogether inadequate treatment of the method of isolating and recognising the organisms which may be found in a given case, and devoted to a more critical appreciation of the problems involved in bacterial inoculations.

*Die Eiszeit und der vorgeschichtliche Mensch.* By Prof. G. Steinmann. Pp. iv+96. (Leipzig: B. G. Teubner, 1910.) Price 1.25 marks.

PROF. STEINMANN, with evident pleasure, contributes this work on the Ice age to a popular series issued by the firm of Teubner. The black letter type shows the audience for which it is intended, and it will admir-