supials enter the scheme, but it may be mentioned that the loss of the primeval carapace of ordinary mammals is attributed (p. 209) to a deficiency of carbonate of lime in the water and plants on which they subsisted. It will also be a surprise to zoologists to learn (p. 142) that the coloration of the Indian black-buck is due to its having lost its armour on the ventral sooner than on the dorsal surface. And equal wonderment will be experienced when they read (p. 300) that dolphins are near relatives of Plesiosaurs, and that the author doubts whether "there are any good reasons for supposing that Ichthyosaurs were *not* mammals"!

In another chapter the author is led, from the study of monstrosities, to the conclusion that horses are more nearly allied to the Artiodactyla than they are to either rhinoceroses or tapirs!

Many more similar instances might be quoted, but it will suffice to say that if the author be right, all zoologists are hopelessly in the wrong in their views on mammalian affinity.

Among the redeeming features in the book will be found many interesting observations on the coloration of cats and horses, and the author appears to have made out a fairly good case for the derivation of the striping of the tiger from the spots of a leopard-like type. Many of the figures of animals, especially the skins of leopards, are admirable examples of photography, and would be well worth reproduction in other works.

R. LYDEKKER.

OUR BOOK SHELF.

Le Cause Dell' Era Glaciale. By Luigi de Marchi, Libero Docente di Meteorologia nella R. Universita di Pavia. (Pavia: Fratelli Fusi.)

THIS work does not fulfil the expectations raised by its title. It is a prize essay of 220 large octavo pages, divided into three sections. The first treats of the climatic conditions of a glacial invasion, and here the author agrees with a number of German writers whom he quotes, in considering that a glacial epoch is due to a lowering of mean animal temperature and a diminution of the annual range, accompanied by an increased rainfall in summer. The next section treats of the temperature of the air. We find a large collection of empiric formulæ, taken for the most part from German authors, some of which are based on assumptions which appear to be far from satisfactory, and which certainly cannot be verified in the exhaustive way which one would wish before applying them to find the temperature in the Glacial Age. Among these there is one more important than the others, in which t, the mean annual temperature at any given locality, is expressed in terms of no less than *fifteen* physical quantities, such as the supposed temperature of an ideal sky,[1] the absolute radiating power of this sky, the transmissive powers of the atmosphere for radiation from earth and water, and for sun-heat, and last, but not least important, "a term of correction which expresses the effect of the physical and meteorological condition of the locality," and this term may, according to the author, oscillate between $-6°$ C. and $+6°$ C.

The third section, entitled "The Cause of a Glacial Age," contains the author's deductions from this formula. He uses it to disprove the hypothesis that the Ice Age was due to a change in the obliquity, but he cannot apply it to discuss Croll's theory, because it only takes account of the *total* annual heat received. Hence he refers to previous writers for his criticism on Croll. Similarly the geographical hypothesis is dismissed as insufficient, so that the way is cleared for the author's own hypothesis, viz. that the Ice Age was caused by a general lowering of temperature which arose from a diminution of the atmospheric transparency, which can only be explained (p. 183) as the effect of a general diffusion into the atmosphere, over the whole surface of the earth, of a gas, vapour, or dust which absorbs, or reflects towards space, a part of the heat which comes from the sun. "But since the glacial epoch also presupposes an extraordinary rainfall, among the many hypotheses which may be framed, one spontaneously presents itself, viz. that a great mass of aqueous vapour was launched against and diffused into the atmosphere." Owing to the lowering of temperature due to want of transparency, the vapour would fall as snow, and this precipitation would go on until the mass of vapour injected into the atmosphere is entirely or in great part eliminated.

The author quotes an Italian writer, who suggests that the action of volcanos in the age preceding the Ice Ages affords a possible explanation of the (supposed) launching of these vast masses of aqueous vapour into the atmosphere.

[1] "Not Ferrel's hypothetical temperature of space, but (following Pouillet, Frölich, and Preuter) the temperature of an ideal surface, of which the radiating power is equivalent to that of the whole atmosphere, and of all the celestial bodies, except the sun." This temperature is taken as equal to $-45°{\cdot}4$ C. for all parts of the globe, the poles as well as the equator.

Leitfaden für histologische Untersuchungen. By Bernhard Rawitz. Second edition. (Jena: Gustav Fischer, 1895.)

HISTOLOGICAL methods have become so perfected, microscopic appliances so modified, and staining reagents so numerous, that it is necessary to have good reference books for use in laboratories. Although there are a number of such works, amongst which we may mention Lee's "Vade Mecum," Sims Woodhead's "Manual," and Fletcher's edition of Von Kahlden's "Practical Pathological Histology," the appearance of a new edition of Rawitz's compendium will be welcomed by all who were familiar with the first edition, which was published six years ago. It resembles Von Kahlden's book in arrangement, but while this latter has been compiled specially for pathological investigations, Rawitz's "Leitfaden" is essentially intended for the biologist and physiologist, and forms a suitable supplement to its morbid counterpart. When reviewing Dr. Fletcher's translation of Von Kahlden's book, some time back, we regretted the omission of various matters relating to section-cutting, embedding and staining, an omission which is excusable on the ground that in a work on practical pathological histology a sound knowledge of these subjects might be taken for granted. Rawitz gives excellent descriptions of all our recognised modern methods, and a careful account of paraffin embedding and paraffin cutting, which will prove useful to all who wish to become familiar with what is undoubtedly the best method for general histological purposes. His directions for working with celloidin are equally good, and since this method is somewhat neglected in this country the beginner will find a number of hints which Dr. Fletcher might well have included in his translation. The completeness with which the various methods of fixation, hardening, and staining have been enumerated is admirable, and we gain the firm conviction that the author has only included what is sound, and in careful hands certain to give good and trustworthy results. Chapter xi. (part 1) contains some useful information on the art of drawing and "reconstructing" microscopical objects. The "Leitfaden" may be recommended without hesitation to the histologist as a book of reference for use in the laboratory: it will save time, and seldom cause disappointment.

A. A. K.