

ture of Ireland are full of suggestive matter, and will be consulted by all who wish to learn what has been done in Irish geology.

The section which will provoke most criticism is, no doubt, the second—on Metamorphic and Eruptive Rocks. The author himself hints something to this effect in his preface. There are objections to the terminology he has invented, the words themselves being unfortunately selected. For Daubrée's term "regional metamorphism" he substitutes *metapepsis*, and, speaks of *metapeptic* rocks. A dyspeptic geologist—and we suppose such beings exist in some number—will shudder at the very sound of these words. Then the old term "contact metamorphism," long ago so elaborately illustrated by Delesse, is replaced by *paroptesis*, and its rocks are called *paroptetic*. Another term, *methylosis*, is applied to a local kind of metamorphism, "due to the introduction and action of chemical substances from without;" and the rocks affected by it are named *methylositic*—a word which many a learner will at once surmise to be connected in some way with the methylated spirit he used to spill and smell of in the days of his practical chemistry.

But accepting these terms, there will be graver objections to some of Mr. Kinahan's metamorphic notions. It is specially unfortunate that he does not give any adequate grounds in this volume for enabling the reader who has not perused his other writings to judge on what detailed evidence his conclusions have been based. For example, he treats quartz-rock as one of the intrusive granitic rocks, and distinguishes it from quartzite or quartz-schist. But we have been unable to discover any passage which explains how he could distinguish these rocks, and what are their relative mineralogical and petrographical characters. Nay, while in one place he includes quartz-rock among the highly siliceous intrusive granitic rocks, he elsewhere speaks of it as having been again and again deposited by springs connected with volcanic action. Surely he does not wish us to believe that even a tyro in petrography would confound siliceous sinter with any form of granitic rock? Again, without giving any data, he speaks of "protrusions of limestone and dolomite." How does he imagine they were protruded? Were they thrust out as solid masses, or like the quartz-rock of his springs? He mentions them in connection with "a sheet of quartz-rock," and speaks elsewhere of having himself observed intrusive quartz-rock in many places. It is evident, however, that it would lead to the most hopeless confusion if the term quartz-rock, which has for generations included hardened siliceous sandstones, sometimes even with traces of organisms, were applied also to any member of the granitic family. Mr. Kinahan should invent another name for his intrusive quartz-rock. He has no timidity in names, and might hit upon one quite as euphonious as those already referred to.

Probably the most valuable part of the book is that which treats of the prehistoric remains. Mr. Kinahan is an authority on *crannoges*; and the digest therefore which he has given of known facts in this subject, besides its interest to the general reader, will be welcomed by geologists to whom the scattered papers in the Transactions of the Irish Societies are not familiar.

The illustrations are singularly poor, and seem all the more so by contrast with the sketches of the lamented

Du Noyer, which have made the geology and scenery of Ireland familiar to many eyes all over the world. Could not Mr. Kinahan have availed himself of some of the drawings, published or unpublished, of his friend? Any additional publicity he could have given them would have been another tribute to the memory of a true artist.

While the author recognises the debt of gratitude owed by Irish geologists to Griffith and Jukes, there are some names which he passes over in strange silence. Why, for instance, could he find no room for the honoured name of Harkness? Surely, when he was writing about the metamorphic rocks of Donegal, he might have made grateful allusion to the geologist who, more than any one else, has thrown light upon these rocks. He quotes two or three times an opinion of Prof. Hull only to reject it, and these are all the direct references he deigns to make to the labours of one who has already done and is still doing so much for the cause of Irish geology; there being not the least allusion anywhere to the previously published volume by that writer. This may have arisen from mere inadvertence, and in that hope we take leave of Mr. Kinahan and his book, wishing for both that appreciation from geological readers which they deserve.

OUR BOOK SHELF

Studies in Comparative Anatomy. No. I. *The Skull of the Crocodile.* By L. C. Miall. No. II. *Anatomy of the Indian Elephant.* By L. C. Miall and F. Greenwood. (London: Macmillan and Co., 1878.)

PROF. MIALL has given in the first of these "Studies" a careful and systematic description of the Skull of the Crocodile, his object being to furnish to students a more complete account of the skull in this family of reptiles than is found in the usual treatises on the Comparative Anatomy of the Vertebrata. He commences by giving a general view of the crocodilian skull, and then sketches its mode of development, pointing out at the same time the relation of the cranial nerves to the post-oral clefts and arches. The individual bones of the skull are then described in detail. An elaborate account is given of the tympanic cavity and of its communications with the several Eustachian passages, which, together with the external auditory meatus, represent the cleft between the mandibular and hyoidean arches. Mr. Miall gives in an appendix a translation, with annotations, of Rathke's account of the development of the skull of the crocodile. The essay will be of great service to those desirous of acquiring a knowledge of the crocodile's skull.

In the second of these "Studies" Prof. Miall writes, in conjunction with Mr. Greenwood, an account of the anatomy of the muscular, vascular, digestive, and genito-urinary systems of the Indian elephant, together with some observations on the organs of special sense. This essay appeared originally in the *Journal of Anatomy and Physiology* for 1878, and in reprinting it the authors have reproduced the plates and woodcuts employed in illustrating their description as it appeared in that *Journal*. Throughout the essay frequent reference is made to the previous literature of the subject, and the authors point out any discrepancies between their observations and the descriptions of the other anatomists who have examined this species of elephant. The part of this essay which contains the greatest number of new facts is the description of the muscular system, which is very carefully done, and forms an important contribution to the myology of this huge animal.