

The evidence in favour of this latter point is of course not decisive. But as the natives declare that the ground always cracks along the old fault-line whenever there is a severe earthquake, it is probable that before long Mr. Egerton and his colleagues may be in a position to renew their very interesting observations, and thereby to extend our knowledge of the crust-movements that are now taking place.

#### NOTICES OF MEMOIRS.

RESEARCHES ON THE STRUCTURE, ORGANIZATION, AND CLASSIFICATION OF THE FOSSIL REPTILIA. Part VIII. On Further Evidences of *Deuterosaurus* and *Rhopalodon* from the Permian Rocks of Russia. By Prof. H. G. SEELEY, F.R.S. Royal Society, June 8, 1893.

THE author endeavours to separate the Labyrinthodont remains, distinguished by having teeth ankylosed to the jaw, from such as belong to animals having a Theriodont type of dentition. The genera founded upon cranial fragments which show the Theriodont type are *Deuterosaurus*, *Rhopalodon*, and *Dinosaurus*. The skull in *Deuterosaurus* is described from new materials, which make known the structure of the palate and other cranial structures. The palate is of Plesiosaurian type. The back of the skull is a vertical plate, and the brain cavity rises in a long vertical tubular mass to the parietal foramen. The quadrate bones descend below the foramen magnum in a way that is best compared with Plesiosaurs.

The articular end of the lower jaw is identified among bones figured by von Meyer.

The skull of *Rhopalodon* is nearly complete, and has a general resemblance to the skull of the South African Dicynodont *Ptychognathus*. The orbit is defended with a sclerotic circle of bones. Whereas in *Deuterosaurus* there is only one molar tooth, in *Rhopalodon* there are apparently eight molar teeth, which have the posterior edge finely serrated.

The vertebræ are known from isolated and connected specimens which indicate a larger number than usual of rib-bearing presacral vertebræ, which appear to be not fewer than nineteen, and may have numbered twenty-six. The sacral vertebræ are deeply cupped, and the sacral ribs are developed as in *Nothosaurus* and *Pareiasaurus*. The sacral ribs form part of the articular face of the first sacral vertebra. The pelvis is imperfectly known; the ilium is not so

looks like one side of a railway embankment about 20 or 30 feet in height. . . . . Not only is there evidence of subsidence along this line, but there are many evidences of horizontal displacement. Lines of roads have been broken, and one part of them thrown to the right or left of their original direction; whilst fields which were rectangular have been cut in two, and one-half relative to the other half been shifted as much as 18 feet up or down the valley. One result of this is that landowners find there has been a partial alteration in the position of their neighbours. A more serious change has been the permanent compression of ground, plots which were 48 feet in length now measuring only 30 feet in length. It appears as if the whole Neo Valley had become narrower. A similar effect is noticeable in the river-beds, where the piers of bridges are left closer together than they were at the time of their construction."—Brit. Asso. Rep. 1892, pp. 116, 117.

extended as in Dicynodonts, and conforms to the type of *Phocosaurus*, which is regarded as Theriodont. The pubis and ischium are united together on the Dicynodont plan, but are only moderately developed.

The scapular arch is completely known, and is formed of scapula, coracoid, and pre-coracoid, as in *Dicynodon* and *Pareiasaurus*. The humerus and bones of the fore limb were relatively short, and only fragments have been preserved which appear to be referable to ulna and radius.

The hind limb is known from several examples of the femur, which resembles that of *Pareiasaurus* in the proximal end, but at the distal end is more like the type described as *Sauroidesmus*.

The tibia is known from its proximal and distal ends; it has a general resemblance to that of *Pareiasaurus*, but is more slender. These types are regarded as constituting a distinct group, named Deuterosauria, which is in many respects intermediate between the Placodontia and Theriodontia, but in skull structure appears also to approach Nothosaurs and Plesiosaurs.

## R E V I E W S.

I.—TEXT-BOOK OF COMPARATIVE GEOLOGY. By E. KAYSER, Ph.D. Professor of Geology in the University of Marburg. Translated and Edited by PHILIP LAKE, M.A., F.G.S., late Harkness Scholar in the University of Cambridge. 8vo. pp. 426, with 596 Illustrations, 73 Plates and 70 Figures in the Text. (London: Swan, Sonnenschein & Co., 1893.)

IN undertaking the translation of Dr. Kayser's "Lehrbuch der geologischen Formationskunde" Mr. Philip Lake has done more than preparing a mere translation. Dr. Kayser's work was intended primarily for use in Germany, it has therefore been found desirable, in the present edition, to very considerably enlarge those portions of the work which deal with descriptions of extra-German countries. Mr. Lake has taken the advice of several of his geological colleagues, whose assistance he duly acknowledges, and amongst other modifications he has introduced the divisions Cambrian, Ordovician, and Silurian, instead of the older subdivisions into Cambrian and Silurian only.

In the introduction the author gives a history of the names which have been adopted in this country and in Germany for the great series of stratified deposits, and the various subdivisions now generally recognised by geologists both at home and abroad.

Division I treats of the general characters and composition of the Archæan rocks, illustrated by ten sections. The total thickness of the Archæan in North America has been estimated at 50,000 feet, and in Bohemia at 100,000.

In II the Palæozoic or primary group is considered, comprising the Cambrian, Ordovician, Silurian, Devonian, Carboniferous and Permian, the six systems forming together a succession of beds fully 100,000 feet thick.