

in association with Permian species of ferns and a *Walchia*, seems however to place these Bohemian beds on a lower geological horizon than the Gondwana series, which have had their palæobotany studied by the same palæontologist, Feistmantel, who investigated the plant-remains of the Permo-Carboniferous of Eastern Europe.

The rich fauna of Labyrinthodontia of the Gaskohle, which, as was explained, Fritsch prefers to study under the more comprehensive group of Stegocephali, is associated with fish of the genera *Ceratodus*, *Orthacanthus*, *Pleuracanthus*, *Acanthodes*, and *Amblypterus*, and also with many species of *Palaoniscus*, found elsewhere in true Permian beds. Amongst the Invertebrates are Arachnoidea, Julidæ, Estheriæ, and Anthracosia.

The part of the work now under consideration is palæontological, and refers to some of the most interesting of the many sculptured-headed, folded-toothed Amphibia which preceded the Reptilia in time. Several classificatory alterations, especially in the grouping of the genera in families, are introduced, and apparently with good reason; and at the commencement it will be noticed that the Microsaurii, Dawson, suffer, and a new family, the Dendroperontidæ, is founded. Fritsch considers that the structure of the teeth of such Microsaurians as *Hylonomus* and *Hylerpeton*, prevents their being associated in the same family with *Dendroperont*, the species of which have teeth strongly grooved from the base, with simple irregular folds, the top being smooth: the new family has, like the Microsaurians, amphiœlian vertebræ. It is certainly remarkable how widely these forms were distributed geographically during that long period when so much of the present continental areas was land. Fritsch describes two new species, and also a third about the generic position of which there may be some doubt, and which has a wonderful arrangement of cranial bones behind the orbits.

The most interesting parts of the work are now reached and the author comes to the consideration of those extraordinary Stegocephali which have such curious double and multiple developments of the vertebral centra. The first of the families of these groups is the Diplovertebridæ, and the solitary form of it is carefully described. The characters of the family are the doubly segmented vertebral centra, at the caudal end of the column, and a very decided pitting of the surfaces of the bones of the extremities for vascular canals.

Fritsch avails himself of Cope's terminology; and the peculiar condition of the vertebral centra—the anterior of the two segments carrying the spinous processes and the ribs, the posterior not having any relics of arches, and being plain—necessitates the arrangement of the species with those whose vertebræ are “embolomeri.” The illustrations of the species on Plates 50 and 52 are admirable, and their comprehension is assisted by the woodcut diagrams placed in the context.

*Sparagmites lacertinus*, Fr., is placed amongst the Archæogosauridæ, and it will be observed (Plate 50, Figs. 15, 16) how the vertebral centra differ from those of the last family. The centra appear to be broken up, and each has two lateral and an inferior component, coming under the division “rachitomi” of Cope. Miall's family Chauliodontia is represented in the Gaskohle by a species, and the preserved remains show the dissimilar teeth with a semi-

Labyrinthodont structure; the genus included is a familiar one to English palæontologists, and is *Loxomma*. The last family, described in the book, has genera with highly developed crania and a parietal foramen (which also occurs in all these forms from the Gaskohle), and the vertebræ are even more remarkable than in the other families. In the Melosauridæ the caudal portion has the centra embolomerous, whilst those of the fore-part of the column are rachitomous; the teeth are dissimilar, and simply and irregularly folded. The supra-occipital bones occasionally have strongly developed, backward projecting, curved processes (*Sehnenhöckern*). The genus *Chelydosaurus*, with a well-developed tarsus and a most singular growth of chest and body plates, belongs to the family. *Sphenosaurus*, H. von Meyer, comes in here, and the species *S. Sternbergii*, elsewhere a Muschelkalk form, is found in the red sandstone of the Bohemian Permian! The new genus *Cochleosaurus* has a species which shows the posterior hooks of the supra-occipital bones in perfection.

The book which contains all this interesting matter will be found of great value by students as well as by advanced palæontologists, and the beauty of the illustrations leaves little to be desired. The Geological Society presented Dr. A. Fritsch with the Lyell Medal and Fund, and the gift was mainly owing to the appreciation of his excellent work amongst these Upper Palæozoic, Permo-Carb. fossils. The work is a great addition to the natural history of the early Vertebrata. P. M. D.

#### OUR BOOK SHELF.

*The Flora of Howth*. By H. C. Hart (Dublin: Hodges, Figgis, and Co., 1887.)

MR. HART enthusiastically describes the parish of Howth as one with many attractions. He thinks that as a sea bathing summer retreat “its equal cannot be found in Ireland”; and he points out that it is invested with archæological interest by a great dolmen in the demesne of Lord Howth, by the ruins of an early abbey in the village of Howth, by the earlier church or chantry of St. Fintan's on the Sutton side, with its holy well, and by the ancient castle, called Corr Castle, of the Barons of Howth. A little way from the shore is Ireland's Eye, with the remains of a church of the sixth or seventh century. For the ornithologist, the entomologist, and the marine zoologist, Howth, according to Mr. Hart, provides much material for study. These things, however, he notes only by the way; it is with the flora of Howth that he is especially concerned. For this he claims attention on two grounds: (1) because several of the species found are rare; (2) because it does not often happen that so many forms exist in so small a space. Mr. Hart has taken great pains to make his account of his subject complete and readily intelligible, and the book ought to be of considerable service to local botanists and tourists.

*Mineralogy*. By Frank Rutley. Third Edition. (London: Thomas Murby, 1887.)

WE are glad to welcome a third edition of this excellent manual, which forms one of Murby's “Science and Art Department” series of text-books. The materials of the little work are arranged with great clearness, and the descriptions of minerals are invariably simple and precise. Nearly the whole of the chapter on crystallography has been re-written, and other alterations have been made to fit the book for the present requirements of students. More than fifty fresh woodcuts have been added.