

specimens of *C. longus*, Owen, in the Oxford Museum. The fine series of remains of a gigantic Cetiosauroid Dinosaur (*Omosaurus armatus*, Owen), from the Kimmeridge Clay at Swindon, furnishes material for a Monograph, with twelve large plates beautifully drawn by C. L. Griesbach; and enables Prof. Owen to enlarge upon the "life and affinities of *Dinosauria*, as elucidated by the known character of *Omosaurus*." The classification of fossil Saurians by H. von Meyer, and the opinions of Prof. Huxley as to the ornithic affinities of the Dinosaurs, are criticized in detail; and the relative smallness of the fore-legs of these great Reptiles is regarded as analogous to that in swimming Crocodiles, and not as having reference to an upright position on their hind-legs in moving on the land.

4.—MONOGRAPHS OF THE PALÆONTOGRAPHICAL SOCIETY FOR 1876.

THE volume for 1876 (vol. xxx.) has (1st) a short Supplement to Prof. Owen's Fossil Reptilia of the Wealden Formation, in which he describes and illustrates a new species of *Poikilopleuron* (*P. pusillus*, Owen), with its cavernous vertebræ, in which ossification had been arrested; also a new genus of gigantic and probably Dinosaurian Reptiles, in which such chondrosal cavities, due to the partial retention of the primitive chondrine, are very characteristic. Two species of this great *Chondrosteosaurus* are known from the Wealden (one of them had been previously referred to *Bothriospondylus*).

2nd.—The British Fossil Brachiopoda are further elucidated and systematized by Mr. Davidson, who has enthusiastically devoted so much time and labour to mastering and explaining the characters and relationships of this most interesting group of shells. Those of the Triassic and Jurassic species which had previously escaped notice are now described, and additional notes on those already known enhance the value of this magnificent Monograph. Plates IX. to XVI. are given with this portion, and illustrate the Jurassic *Tretenterata* and *Clistenterata*.

3rd.—H. B. Brady's Monograph of Carboniferous and Permian Foraminifera (the genus *Fusulina* excepted), 166 pages, with 12 plates, is one of the most exhaustive and perfect Monographs yet supplied by the Palæontographical Society. The Introduction tells of the history of the undertaking, and enumerates the author's fellow-workers and helpers. Under "General Considerations" he tells us of the relationship of limestones and *Foraminifera*; pointing out that only some limited portions of the Mountain-limestone appear to be formed of *Foraminifera* in the British and West-European area, though *Fusulina* constitutes enormous masses of that limestone in Russia and North America. Indeed, he considers that there are large areas of this limestone where the sea appears to have deposited its excess of mineral constituents by chemical precipitation, resulting in concretionary, spheroidal, or oolitic structures; organic remains, if not absent, having been either dissolved or masked. The rationale of the necessary physical conditions and changes is briefly explained. The occasional presence of *Foraminifera* in prepared slices of the British Carboniferous and Permian limestones (for these formations

are treated of together), and the more frequent opportunities of finding them afforded by the disintegrated shaly wayboards, or partings, of the limestone, are also noticed.

The "Zoological Considerations," of especial interest to the Rhizopodist, comprise a critical review of von Reuss' and Carpenter's classifications of *Foraminifera*, and a general comparison of the generic forms known in the Carboniferous strata with those now living. The conclusions arrived at are—1st. The prevalent forms (except *Fusulina*) in the Carboniferous and Permian limestones do not belong strictly to either of the two sub-orders (*Imperforata* and *Perforata*) into which *Foraminifera* have been divided, but to intermediate types (especially *Trochammina*, *Valvulina*, *Endothyra*, *Nodosinella*, and *Stacheia*), neither invariably arenaceous nor uniformly perforate in their shell-texture. 2nd. In the modifications of these primitive intermediate types there are some varieties conspicuously sandy and imperforate, others essentially hyaline and porous; and these varietal peculiarities seem to have been transmitted as permanent characters, thereby originating the two parallel isomorphic series. 3rd. The porcellaneous imperforate group (*Miliolida*) is of later creation, judging from negative evidence. 4th. The Permian Rhizopod-fauna is much more limited than the Carboniferous, being confined to five generic types (*Trochammina*, *Nodosinella*, *Nodosaria*, *Textularia*, and *Fusulina*), representing, however, at least four distinct families of *Foraminifera*, which in the Carboniferous rocks are represented by fifteen genera.

In the "Geological and Geographical" section, Mr. Brady gives a catalogue of the localities from which, with the aid of many friends, he obtained the *Foraminifera* described and figured in this Monograph. The exact geological horizon is duly indicated, whenever ascertained. The North of England, Midland Counties and Wales, Bristol District, Scotland, Ireland, Belgium, Russia, and North America are the regions, subdivided into many districts, whence have come the 142 specimens of Carboniferous rocks, which yielded *Foraminifera* to Mr. H. B. Brady's careful, and indeed laborious, examination. Very many specimens of the Magnesian Limestone of England and Ireland, and the Zechstein and Kupferschiefer of Germany have been thoroughly searched by our indefatigable author for the Permian Foraminifers.

The "Bibliography," pp. 51-55, comprises the titles and dates of the books and memoirs referred to in the Monograph; they reach from 1826 to 1876.

The following genera and species are described and figured. The plates have been exquisitely lithographed by A. T. Hollick after Mr. Brady's drawings:—

SACCAMMINA, Sars.

Carteri, Brady.

LITUOLA, Lamarck.

nautiloides, Lamarck.

Bennieana, nov.

HAPLOPHRAGMIUM, Reuss.

rectum (Brady).

CLIMACAMMINA, Brady.

antiqua, Brady.

TROCHAMMINA, Parker & Jones.

incerta (d'Orbigny).

centrifuga, Brady.

anceps, nov.

annularis, nov.

TROCHAMMINA, Parker & Jones.
gordialis, Parker & Jones.
pusilla (Geinitz).
milioloides, P., J., & K.
Robertsoni, nov.
filum (Schmid).
 VALVULINA, d'Orbigny.
palæotrochus (Ehrenb.).
 — var. *compressa*, Brady.
Youngi, Brady.
 — var. *contraria*, Brady.
decurrens, Brady.
plicata, Brady.
bulloides, nov.
rudis, nov.
 ENDOTHYRA, Phillips.
Bowmani, Phillips.
ammonoides, Brady.
globulus (d'Eichwald).
crassa (Brady).
radiata (Brady).
macella (Brady).
ornata (Brady).
 — var. *tenuis*, nov.
obliqua (Brady).
subtilissima, nov.
 NODOSINELLA, gen. nov.
digitata, nov.
 NODOSINELLA, *cylindrica*, nov.
priscilla (Dawson).
concinna, nov.
lingulinoides, nov.
 STACHELA, gen. nov.
marginulinoides, nov.
fusiformis, nov.

STACHELA, gen. nov.
pupoides, nov.
acervalis (Brady).
congesta, nov.
polytrematoides, nov.
 LAGENA, Walker & Jacob.
Parkeriana, nov.
Hutchiniana, nov.
Lebouriana, nov.
 NODOSARIA, Lamarck.
radicula (Linné).
 DENTALINA, D'Orbigny.
communis, d'Orbigny.
multicostata, d'Orbigny.
 TEXTULARIA, DeFrance.
gibbosa, d'Orbigny.
eximia, d'Eichwald.
Jonesi, nov.
tritium, Jones.
multilocularis, Reuss.
 BIGENERINA, d'Orbigny.
patula, nov.
 TRUNCATULINA, d'Orbigny.
carbonifera, nov.
Boueana, d'Orbigny.
 PULVINULINA, Parker & Jones.
Broeckiana, nov.
 CALCARINA, d'Orbigny.
ambigua, nov.
 ARCHÆDISCUS, Brady.
Karreri, Brady.
 AMPHISTEGINA, d'Orbigny.
minuta, nov.
 NUMMULINA, d'Orbigny.
pristina, Brady.

The exposition of the structure of *Valvulina* and *Endothyra* and their interesting subarenaceous allies, already noticed,—and the discovery of the *Rotalinæ* (*Truncatulina*, *Pulvinulina*, *Calcarina*), and of the *Nummulinidæ*, (*Archædiscus*, *Amphistegina*, and *Nummulina*) in the Carboniferous Limestones, are some of the most important points in this excellent Monograph; and its value is greatly enhanced by eight elaborate Tables, special and general, showing in great detail the geological and geographical distribution of the 58 species, according to their localities and stratal horizons in the many districts whence they were obtained. A perfect Index for genera and species and their synonyms completes the volume. T. R. J.

REPORTS AND PROCEEDINGS.

GEOLOGICAL SOCIETY OF LONDON.—I.—March 21st, 1877.—Prof. P. Martin Duncan, M.B., F.R.S., President, in the Chair.

The following communications were read:—

1. "On the Strata and their Fossil Contents between the Borrowdale Series of the North of England and the Coniston Flags." By Prof. Robert Harkness, F.R.S., F.G.S., Professor of Geology in Queen's College, Cork, and H. Alleyne Nicholson, M.D., D.Sc.,