

ROYAL SOCIETY.

March 23, 1848.—“ Observations on some Belemnites and other fossil remains of Cephalopoda, discovered by Mr. Reginald Neville Mantell, C.E., in the Oxford Clay, near Trowbridge in Wiltshire.” By Gideon Algernon Mantell, Esq., LL.D., F.R.S., Vice-President of the Geological Society.

The author states, that a line of railway now in progress of construction to connect the large manufacturing town of Trowbridge with the Great Western, being part of the Wilts, Somerset, and Weymouth line, traverses extensive beds of the Oxford clay of the same geological character as those at Christian-Malford in the same county, which furnished the remarkable fossil cephalopods described by Mr. Channing Pearce under the name of *Belemnoteuthis*, and by Professor Owen (in a memoir which received the award of a Royal Medal of this Society), as the animals to which the fossils commonly known by the name of *Belemnites* belong.

The son of the author, Mr. R. N. Mantell, being engaged in these works under the eminent engineer Mr. Brunel, availed himself of the opportunity to form an extensive and highly interesting collection of the fossils of the Oxford clay, and other oolitic deposits cut through or exposed by the engineering operations. Among those transmitted to the author are many illustrative examples of *Belemnoteuthes* and *Belemnites*; some of which confirm the opinions entertained by the late Mr. C. Pearce, Mr. Cunnington, and other competent observers, that the body and soft parts, with the cephalic uncinated arms, &c. of cephalopods, obtained from Christian-Malford by the Noble President and Mr. Pearce Pratt, and referred by Professor Owen in the memoir above-mentioned to the Belemnite, belong to a distinct genus—the *Belemnoteuthis*.

The author describes and figures several perfect examples of the phragmocone of the *Belemnoteuthis*, and institutes a comparison between them and a beautiful example of the phragmocone of a belemnite occupying the alveolus of the guard; and defines the essential differences observable in the form and structure of these chambered calcareous cones. He especially points out as distinctive characters of the phragmocone of the *Belemnoteuthis*, two flat longitudinal ridges which extend upwards from the apical extremity, and the granulated and striated external surface of the epidermis. The phragmocone of the Belemnite has a smooth surface, is destitute of any longitudinal ridges, and terminates at the apex in a very fine point, the axis being in an oblique direction.

The author next describes a remarkable specimen of a Belemnite, twenty-two inches in length, in which the osselet or guard, phragmocone, and capsule or receptacle, are preserved in connexion. In this fossil is demonstrated, for the first time, the upper or basal termination of the phragmocone, with two elongated calcareous processes extending upwards from the margin: these are analogous in form and position to the prolongations from the peristome of the

outer chamber of certain Ammonites, as for example, in *A. Jasoni*. In the phragmocone of the *Belemnoteuthis* the peristome is entire.

Another interesting part of the structure of the Belemnite, not previously detected, is also shown in the same specimen, as well as in many other examples found in the Oxford clay near Trowbridge; namely, a calcareous shelly periosteum or capsule, which invests the guard, and expands upwards into a horny sheath or receptacle, that surrounds the basal chamber of the phragmocone in which the viscera were probably contained. This receptacle was formerly supposed to originate from within the alveolus of the guard. Mr. Miller, many years ago, inferred the existence of a vascular integument around the guard from the meandering impressions of blood-vessels observable on the surface of some specimens; but the presence of a calcaréo-corneous capsule or sheath investing the guard, and expanding into a horny receptacle, has not till now been demonstrated.

The author considers the facts described as proving that the cephalopod of the Belemnite was entirely distinct from the *Belemnoteuthis*; and that the muscular mantle, cephalic arms, and other parts referred by Professor Owen to the former, exclusively belong to the latter genus.

He concludes that the remains of at least three genera of naked Cephalopoda occur in the argillaceous deposits of the oolite in Wiltshire; namely, the first or true *Calamary*, with a horny dorsal gladius or pen; the second, the *Belemnoteuthis*, or a decapod with uncinated cephalic arms, ink-bag, pallial fins, and a corneo-calcareous phragmocone; and the third, the *Belemnite*, which possessed a phragmocone having the apical part implanted in the cavity or alveolus of a guard or osselet, which in its original state resembled in substance the sepistaire of the Cuttle-fish, but is generally found mineralized by calcareous spar; and the peristome, possessing two or more elongated shelly processes; both the guard and the phragmocone being invested with a corneo-calcareous capsule or receptacle. He observes, lastly, that the body and other soft parts of the cephalopod of the Belemnite are at present unknown. The author's communication was illustrated by drawings, and accompanied by the specimens above described.

MISCELLANEOUS.

On a new genus and species of Fossil Ruminantia, Poebrotherium Wilsoni. By JOSEPH LEIDY, M.D.

INDIRECTLY through Mr. J. S. Phillips and the influence of Dr. S. G. Morton, the Academy has become the depositary of a valuable and unique fossil, received through Dr. S. D. Culbertson of Chambersburg, Pa., from Mr. Joseph Culbertson.

As first received, it consisted of a mass of argillaceous limestone, having one side of a cranium of an animal exposed to view, which, by the patience of Dr. T. A. Wilson, was relieved of its matrix; and



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