XII.—Description of some Fossil Crustacea and Radiata, found at Lyme Regis, in Dorsetshire.

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LORD COLE and Sir Philip Egerton having placed in my hands some fossils, which they have lately found at Lyme Regis, I proceed to describe those which appear to me to be new. (See Plate XII.)

1. CRUSTACEA.

The first of this class to which I shall call attention is a crustacean, which must have been of considerable size, and which, from its form, appears to me to be very interesting. Though the *post-abdomen*, or tail, as it is vernacularly called, is entirely wanting, enough remains of the anterior parts to indicate in a satisfactory manner the organization of the animal, and its place among its congeners. The lamellæ of the external antennæ would show that it was a macrourous decapod, of the Shrimp family (*Salicoques* of the French), and the chelæ have some characters approaching to those of *Palæmon*; but the absence of the serrated rostrum and the presence of other characters forbid us to arrange it under that genus. The middle notch of the carapace, and indeed the general form of that part are very like *Palinurus*. If the habits of this animal may be considered to have approached those of the Shrimps (and the very thin armour of the carapace would lead a good way to this conclusion), its remains are those of a comparative giant of that race, fit to grapple with the decomposing flesh of the Enaliosaurians. Upon the whole evidence the place of this animal appears to me to be between *Palinurus* and the Shrimps, and its organization leads me to consider it as a crustacean *sui generis**. I have named it in honour of Lord Cole, whose zeal in

* M. Milne Edwards, in his *Histoire Naturelle des Crustacés* (tom. ii. p. 337.), gives the characters from my description in the "Proceedings," and says, "Le Genre *COLEIA*, établi récemment par M. Bröderip, d'après un Crustacé fossile du Lias, n'est aussi qu'imparfaitement connu, mais nous paraît devoir être intermédiaire entre les Astaciens et les Salicoques;" and he, accordingly, places it between *Nephrops* and *Crangon*. When M. Milne Edwards wrote, the smaller but more perfect specimen with the post-abdominal segments was not known to me, nor were

collecting is only equalled by the liberality with which he applies the riches of his museum to the advancement of science.

Since the above was written, Mr. Lonsdale forwarded to me another specimen from Lyme, which upon examination turned out to be a young individual of the same species, having the post-abdomen or tail *in situ*, and the other parts comparatively perfect. This specimen, which is in the Museum of the Geological Society, so entirely corroborates the view which I had formed from the examination of Lord Cole's large specimen, that I have only found it necessary to add the description of the post-abdominal segments*.

COLEIA.

Generic Character.

Antennæ. Base of Mesial antennæ (antennæ internæ) not extending beyond the anterior spine of the thorax; each antenna terminated by two annular setæ, the external setæ being the longest. External antennæ provided with a large and wide scale; the terminal setæ large, but the length undetermined.

Eyes, pedunculated, directed outwards, approaching in their situation and form to those of *Palinurus*.

Thorax (carapace), thin, divided transversely by furrows indicating the different regions, tuberculated, spinous at the sides, and with three deep emarginations anteriorly, the middle one the largest, each of the four anterior angles produced into a strong spine.

Feet. First pair long, slender, the *cubit* (cubitus) with small spines or serrations on the internal margin, and terminated externally by three strong spines. *Hand* (manus) elongated, slender; *digits* slightly incurved, filiform, unarmed, pointed.

Post-abdominal segments, tuberculated and strongly marked by transverse ridges. Caudal lamellæ approaching in their form to those of the salicoques or shrimps.

Species. COLEIA ANTIQUA.

Mus. Cole. Pl. XII. fig. 1, 2.

Found in the lias at Lyme Regis by Miss Anning.

I have next to notice a fragment of the post-abdomen of another macrourous decapod, approaching in its sculpture nearest to *Palinurus*. This crus-

either of the figures which now illustrate this part of the paper published. M. Milne Edwards in giving the description seems to think that the *carpus*, not the *cubitus*, was intended by the author, when he describes the joint as having small spines or serratures on the internal margin, and as being terminated by three strong spines; for M. Edwards writes, "le cubitus (Carpe?) garni de petites épines," etc. It is the cubitus that is so armed. (Sept., 1837.)

* This interesting specimen was the property of Alfred Cloyne Austen, Esq., F.G.S., who left it with Mr. Lonsdale to be described. When Mr. Lonsdale informed him that it was introduced into the plate illustrating this little memoir, he most liberally presented it to the Geological Society.

tacean must have been of large size, as large as that of the common *Palinurus* (sea crawfish of the shops)*. From the lias.

A series of specimens next claims our attention; but the state in which they are renders it difficult to lay down any generic character. The remains are those of another macrourous decapod of a rather small size. The chelæ and legs are washed away, and the carapace is very obscure. Two of the specimens however present a curious phænomenon. In these the accurate observer will see the breathing organs of this delicate crustacean, after an inhumation of thousands of years, presented to him in a petrified state. The tips of the four larger branchiæ, and of the four smaller ones below, may be observed pointing towards the situation of the heart, and these branchiæ show that the crustacean before us did not belong to the Amphipoda, but to the highest division of the Macroura. The spines are like those of *Crangon salebrosus*; and the general organization, so far as it is presented to our view, reminds us of the arctic forms of the Macroura. I am aware that the information afforded by these specimens, though it is of a highly interesting nature, is only scanty; but there is enough to satisfy me, and indeed to convince my friend Mr. Owen, whose attention to this branch of natural history makes his opinion of great value, that these crustaceans evidently belonged to the salicoques of Latreille. - I am inclined to think that two of the specimens are specifically different from the others, and in one a monodactylous leg is preserved. Two of those which afford the best information on the subject of the petrified branchiæ are figured Pl. XII. fig. 3, 4.

These crustaceans were found immediately below the town of Lyme, on *Broad-ledge*, which consists of a bed of finely laminated lias shale. They were associated with *Pholidophori*, viz. *Bechei*, *latiusculus* and *medius*; and also with several species of *Tetragonolepis* and *Dapedium*, and with remains of *Ichthyosaurus* and *Plesiosaurus*.

2. RADIATA.

Genus Ophiura.

The specimens of this *Ophiura*, which I believe to be undescribed, were found about half a mile west of Bridport Harbour, in masses of micaceous sandstone which had fallen from the cliff to the beach. (See Mr. de la Beche's section, Trans. Geol. Soc. vol. ii. pl. III. 2d series.) Mr. Lonsdale considers

* The figure of the imperfect remains of a crustaceous animal, from the cabinet of Miss Philpot of Lyme (Trans. Geol. Soc. vol. ~~ix~~ ^x Pl. ~~X~~ ^{XI} 2d series), does not afford sufficient information for accurate comparison.

4 IV. fig. 3.

the bed to be a member of the lias, between the alum shale of Yorkshire, and the lias of the west of England. He considers the lower part of the sand, represented in Mr. de la Beche's section, to be the marlstone of William Smith; and the bed of grey marl to be the representative of the alum shale of Yorkshire.

OPHIURA EGERTONI.

Oph. radiis tereti-subulatis, articulis supernè subtrilobatis, disco sub-plano, subpentagono, rotundato*.

Mus. Cole.—Egerton. Pl. XII. fig. 5, 6, 6*.

This species approaches very near to *Ophiura texturata*, nor is it at all improbable that the living *Ophiura* may sometimes rest on the remains of its ancient fossil congener; for Lord Cole and Sir Philip Egerton dredged up the recent animal from the trawling ground at Lyme.

Some of the specimens have been weathered to a nicety, and these display in a beautiful manner the articulation and structure of the animal. Others are surrounded and clogged with the matrix, and this is only noticed that the different appearances may not lead to a supposition that there is among them more than one species, viz., that which I have named after the indefatigable Sir Philip Egerton, who worked the specimens out with his own hand. Since the above was written Lord Cole has found some very small individuals.

Ophiura Egertoni differs from *Ophiura Milleri* of Professor J. Phillips, inasmuch as, among other differences, the disk of the latter is lobated, according to the figure given in the "Geology of the Yorkshire coast," Plate XIII. fig. 20. There is no description; but there is authority for considering the figure to be correct, though it is stated to have been drawn from separate parts†.

Genus *Cidaris*.

Several specimens of this genus are among the collection submitted to my observation. They appear to me to be the same species in different stages of growth, and may be identical with that figured as an *Echinus* by Mr. de la Beche, in the Trans. Geol. Soc. vol. ii. Pl. IV., 2d series. I have not seen the specimen, but the proportion of the mamilla, or ball of the spine joint, as given in the figure, is larger than that of the same part in those before me.

CIDARIS BECHËI.

Cid. testâ subglobosâ, mamillis parvulis, spinis elongatis, aculeatis.

Mus. Cole.—Egerton.

I have named this *cidaris* after my friend Mr. de la Beche, whose geological works are too extensively known and valued, to require more than an allusion to them on my part.

* The reader must remember that the external surface is abraded, in the specimen from which the description and principal figure are taken; and that in its natural state, the disk had probably a more rounded form.

† I have not been able to procure a sight of the fossil *Ophiura*, in the museum of Mr. Matthew Wright of Bristol, from the lias on the banks of the Severn in Gloucestershire, and the cast does not convey sufficient information for comparison. Professor Sedgwick has been good enough to forward to me three specimens of *Ophiura*, which he had procured from Miss Anning. They appear to me to be all *Ophiuræ Egertoni*.

*Fig. 1 & 2. Colera antiqua, p. 172.
 Fig. 3 & 4. Remains of a Macrourous Decapod, allied to the Talicrues of Latreille, p. 173.
 Fig. 5. Columnaria, p. 174. Fig. 6. External surface of the Dorsal aspect of an worm of the same species, p. 174.*

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