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From these details the following changes are inferred :

1st, A surface of dry land, consisting of gravel derived from the neighbouring rocks, either while the district was submarine, or during the rise of the strata, or by subsequent denudation, or by these causes united.

2ndly, The surface was covered with a forest of birch, oak, and fir.

3rdly, The forest was destroyed, or it decayed, and a peat bog was formed.

4thly, A rush of sea buried the bog beneath a mass of loam and gravel, containing fragments of existing marine shells and granite boulders.

In conclusion, the author draws attention to the natural sections on both sides of the Severn, west of Shrewsbury, about one mile above the Welsh Bridge, in one of which he obtained, after much search, a few fragments of shells ; and he begs geologists in general, both in England and Ireland, to institute a patient examination of the superficial gravel of their neighbourhood for fragments of shells, however, comminuted.

A paper was also read, entitled, "Description of some Fossil Crustacea and Radiata ;" by William John Broderip, Esq., F.G.S. F.R.S., &c.

Lord Cole and Sir Philip Egerton having placed in the author's hands some fossils which they had lately found in the lias at Lyme Regis, a detailed account is given, in the memoir, of those which he considers to be new.

#### CRUSTACEA.

The first specimen described consists of the anterior parts of a macrourous Decapod, between Palinurus and the Shrimp family, but of a comparatively gigantic race ; and its organization being considered by the author to be *sui generis*, he has assigned to the fossil the name of *Coleia antiqua*, with the following generic characters :

"*Antennæ*. Base of mesial antennæ (*antennæ internæ*) not extending beyond the anterior spine of the thorax ; each antenna terminated by two annular setæ. External antennæ provided with a large and rude scale, and having a spine on the exterior of the penultimate joint : the terminal setæ large, but the length undetermined.

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

"*Feet*. First pair long, slender ; the cubit (*cubitus*) with small spines or serratures on the internal margin, and terminated externally by three strong spines.

"*Hand* (*manus*) elongated, slender ; digits slightly incurved, filiform, unarmed, pointed.

"*Thorax* thin (divided transversely by furrows indicating the different regions), tuberculate, 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."

The collection contained the remains of other macrourous Decapods. One of these specimens consisted of a fragment of the post-abdomen,



approaching nearest in sculpture to *Palinurus*, and equaling in size the sea crawfish: and two others are peculiarly interesting from their exhibiting the tips of the four larger branchiæ, and of the four smaller ones below, pointing towards the situation of the heart, and proving, the author observes, that this Crustacean did not belong to the Amphipoda, but to the highest division of the Macroura, of the arctic forms of which it reminds the observer.

#### RADIATA.

**OPHIURA EGERTONI.** *Oph. radiis tereti-subulatis, disco subplano, rotundato.*

This species, Mr. Broderip states, approaches very nearly to the recent *Ophiura texturata*, and differs from *Ophiura Milleri* of Phillips, in as much as, among other differences, the disk of the latter is lobated according to the figure given in the "Geology of the Yorkshire Coast." 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. The specimens were found about half a mile west of Bridport harbour, in masses of micaceous sandstone fallen from the cliffs.

**CIDARIS BECHEI.** *Cid. testâ subglobosâ, mamillis parvulis, spinis elongatis, aculeatis.*

This fossil the author considers may be identical with that figured in the Geological Transactions, Second Series, vol. ii. Pl. IV. as an Echinus.

A letter from Sir Philip de Malpas Grey Egerton, Bart., M.P., V.P.G.S., addressed to the President, "On the Discovery of Ichthyolites in the South-western Portion of the North Staffordshire Coal-field," was then read.

The part of the coal-field in which the ichthyolites occur is called Silverdale, and consists of the following beds:

Superficial covering.

1. Argillaceous shale, generally of a lightish colour and soft texture.
2. Ditto, of harder texture, and more calcareous.
3. Ditto, black, and highly fissile.
4. Ditto, more compact, containing nodules of ironstone.
5. Ironstone, extensively wrought.

Beds 1 and 2 abound in vegetable remains, and the upper portion may be distinguished by the frequent occurrence of *Stigmaria ficoides*. The ichthyolites are principally contained in No. 4, and consist of teeth, palatal bones, and scales, belonging to the Placoidian order, and to the Sauroid and Lepidoidian families of the Ganoidian order of M. Agassiz.

Some of the scales correspond precisely with those of the Megalichthys, described by Dr. Hibbert, from Burdiehouse near Edinburgh\*: but the plants associated with the ichthyolites, the author states on

\* Transactions of the Royal Society of Edinburgh, vol. xiii. pl. 8. fig. 3. and pl. 11. figs. 2, 7, 8.