

## CHAPTER XXI.

JURASSIC GROUP—*continued*. LIAS.

Mineral character of Lias—Name of Gryphite limestone—Fossil shells and fish—Radiata—Ichthyodorulites—Reptiles of the Lias—Ichthyosaur and Plesiosaur—Marine Reptile of the Galapagos Islands—Sudden destruction and burial of fossil animals in Lias—Fluvio-marine beds in Gloucestershire, and insect limestone—Fossil plants—Origin of the Oolite and Lias, and of alternating calcareous and argillaceous formations—Oolitic coal-field of Virginia, in the United States.

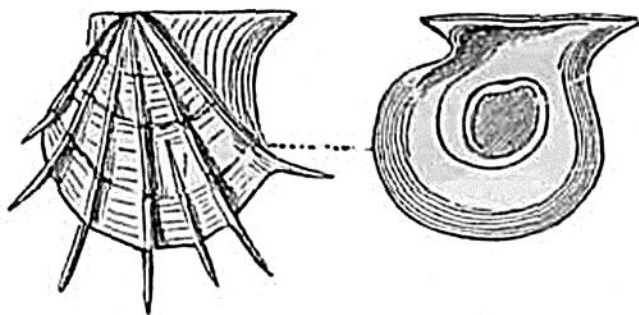
LIAS.—The English provincial name of Lias has been very generally adopted for a formation of argillaceous limestone, marl, and clay, which forms the base of the Oolite, and is classed by many geologists as part of that group. They pass, indeed, into each other in some places, as near Bath, a sandy marl called the marlstone of the Lias being interposed, and partaking of the mineral characters of the lias and the inferior oolite. These last-mentioned divisions have also some fossils in common, such as the *Avicula inæquivalvis* (fig. 398). Nevertheless, the Lias may be

Fig. 399.

Fig 398.



*Avicula inæquivalvis*, Sow.  
Lower Oolite.



*Avicula cygnipes*, Phill.  
Marlstone, Gloucestershire; Lias, Yorkshire.

traced throughout a great part of Europe as a separate and independent group, of considerable thickness, varying from 500 to 1000 feet, containing many peculiar fossils, and having a very uniform lithological aspect. Although usually conformable to the oolite, it is sometimes, as in the Jura, unconformable. In the environs of Lons-le-Saulnier, for instance, in the department of Jura, the strata of lias are inclined at an angle of about  $45^{\circ}$ , while the incumbent oolitic marls are horizontal.

The peculiar aspect which is most characteristic of the Lias in England, France, and Germany, is an alternation of thin beds of blue or gray limestone, having a surface which becomes light-brown when weathered,