

rounded by dense masses of air-roots, which often double or quadruple the diameter of the original stem; in this respect bearing a strong resemblance to the living arborescent ferns of New Zealand.

The marl-slate (No. 5) consists of hard calcareous shales, marl-slates, and thin-bedded limestone, the whole nearly thirty feet thick in Durham, and yielding many fine specimens of Ganoid and Placoid fishes—*Palæoniscus*, *Pygopterus*, *Cœlacanthus*, and *Platysomus*—genera which all belong to the Carboniferous system, and which Professor King thinks probably lived at no great distance from the shore; but the Permian species of the marl-slate of England are identical with those of the copper-slate of Thuringia. Agassiz was the first to point out a remarkable peculiarity in the forms of the fishes which lived before and after this period. In most living fishes the trunk seems to terminate in the middle of the root of the tail, whose free margin is “homocercal” (even-tail), that is, either rounded, or, if forked, divided into two equal lobes. In *Palæoniscus*, and most Palæozoic fishes, the axis of the body is continued into the upper lobe of the tail, which is thus rendered unsymmetrical, as in the living sharks and sturgeons. The latter form, which Agassiz termed “heterocercal” (unequal-tail) is only in a very general way distinctive of Palæozoic fishes, since this asymmetry exists, though in a minor degree, in many living genera besides those just mentioned. The compact limestone (No. 4) is rich in Polyzoa. The fossiliferous limestone (No. 3), Mr. King considers, is a deep-water formation, from the numerous Polyzoa which it contains. One of these, *Fenestella retiformis*, found in the Permian rocks of England and Germany, sometimes measures eight inches in width.

Many species of Mollusca, and especially Brachiopoda, appear in the Permian seas of this age, *Spirifera* and *Producta* being the most characteristic.

Other shells now occur, which have not been observed in strata newer than the Permian. *Strophalosia* (Fig. 73) is abundantly represented in the Permian rocks of Germany, Russia, and England, and much more sparingly in the yellow magnesian limestone, accompanied by *Spirifera undulata*, &c. *S. Schlotheimii* is widely disseminated both in England, Germany, and Russia, with *Lingula Credneri*, and other Palæozoic Brachiopoda. Here also we note the first appearance of the Oyster, but still in small numbers. *Fenestella* represents the Polyzoa. *Schizodus* has been found by Mr. Binney in the Upper Red Permian Marls of Manchester; but no shells of any kind have hitherto been met with in the Rothliegende of Lancashire, or in the Vale of Eden.