

pressed stems of *Psilophyton* (Fig. 350). The adjoining land was doubtless clothed with a flora in large measure lycopodiaceous.

The Old Red Sandstone of the northern basin (Lake Orcadie) is typically developed in Caithness, where it consists chiefly of the well-known dark-gray bituminous and calcareous flagstones of commerce. It rests unconformably upon various crystalline schists, granites, etc., and must have been deposited on the very uneven bottom of a sinking basin, seeing that occasionally even some of the higher platforms are found resting against the more ancient rocks. The lower zones consist of red sandstones and conglomerates, which graduate upward into the flagstones. Other red sandstones, however, supervene in the higher parts of the system. The total depth of the series in Caithness has been estimated at upward of 16,000 feet. Murchison was the first to attempt the correlation of the Caithness flagstones with the Old Red Sandstone of the rest of Britain. Founding upon the absence from these northern rocks of the cephalaspidean fishes characteristic of the admitted Lower Old Red Sandstone in the south of Scotland and in Wales and Shropshire, upon the presence of numerous genera of fishes not known to occur elsewhere in the true Lower Old Red Sandstone, and upon the discovery of a *Pterygotus* in the basement red sandy group of strata, he concluded that the massive flagstone series of Caithness could not be classed with the Lower Old Red Sandstone, but must be of younger date. He supposed the red sandstones, conglomerates, and shales at the base, with their *Pterygotus*, to represent the true Lower Old Red Sandstone, while the great flagstone series with its distinctive fishes was made into a middle division answering in some of its ichthyolitic contents to the Middle Devonian rocks of the Continent. This view was accepted by geologists. I have, however, endeavored to show that the Caithness flagstones belong to the Lower Old Red Sandstone, and that there is no evidence of the existence of any middle division. It appears to me that the discrepancy in organic contents between the Caithness and the Arbroath flags is by no means so strong as Murchison supposed, but that several species are common to both. In particular, I find that the characteristically Lower Old Red Sandstone and Upper Silurian crustacean genus *Pterygotus* occurs, not merely in the basement zone of the Caithness flags, but also high up in the series. The genera *Acanthodes* (*Mesacanthus*) and *Diplacanthus* (*Isch-*