

South Wales and Somerset. They consist chiefly of shales and sandstones, with marine shells and occasional land-plants. The *Millstone grit* of South Wales is comparatively unfossiliferous, but sometimes contains the remains of plants, and more rarely *Orthoceras* and other marine shells.

The *Coal-measures* and *Millstone grit* of Monmouthshire, Glamorganshire, and Pembrokeshire, lie in a great oval basin, encircled by a rim of Carboniferous Limestone, beneath which lies the Old Red Sandstone. The Coal-measure beds alone were estimated by Sir William Logan at from 10,000 to 12,000 feet thick. They consist of alternations of sandstone, shale, fireclay or underclay, coal, and ironstone. There are about 100 beds of coal in the field, many of which are workable, chiefly in the lower part of the series, where the principal ironstones also occur. In the shales and sandstones large stems of plants are sometimes found standing vertically, in the positions in which they grew. Underneath each bed of coal is a bed of underclay with *Stigmara*, forming the soil in which the plants were rooted, by the decay of which, passing through the stage of peat, material was supplied for the subsequent production of coal. *Stigmara*, once supposed to be a special plant, was first proved by Mr. Binney to be the root of *Sigillaria*, and about the same time Logan showed that the *underclay* was a soil that lay invariably underneath beds of coal, and indeed that these roots and rootlets are in every underclay. The plants (the decay of which formed beds of coal) consisted largely of gigantic club-mosses, such as *Lepidodendron* and *Calamites* (Equisitaceæ) of various species, and many other ferns, with a few Coniferæ, &c.

Passing from east to west in this coal-field, the coals