of limestone, with pectens, oysters, and other marine shells, occur in this grit, just as in the regular coal-measures, and even a few seams of coal. I shall treat, therefore, of the whole group as consisting of two divisions only, the Coal-measures and the Mountain Limestone. The latter is found in the southern British coal-fields, at the base of the system, or immediately in contact with the subjacent Old Red Sandstone; but as we proceed northwards to Yorkshire and Northumberland it begins to alternate with true coal-measures, the two deposits forming together a series of strata about 1000 feet in thickness. To this mixed formation succeeds the great mass of genuine mountain limestone.* Farther north, in the Fifeshire coal-field in Scotland, we observe a still wider departure from the type of the south of England, or a more complete intercalation of dense masses of marine limestones with sandstones and shales containing coal.

In Ireland a series of shales and slates, constituting the base of the Mountain Limestone, attain so great a thickness, often upwards of 1000 feet, as to be classed as a separate division. Under these slates is a Yellow Sandstone, also considered as carboniferous from its marine fossils, although passing into the underlying Devonian. A similar sandstone of much less thickness occurs in the same position in Gloucestershire and South Wales.

The following are the subdivisions adopted in the geological map of Ireland, constructed by Mr. Griffiths:

	Thickness in feet.
1. Coal-measures, Upper and Lower	1000 to 2200
2. Millstone-grit	350 to 1800
3. Mountain limestone, Upper, Middle (or Calp), and Lower	1200 to 6400
4. Carboniferous slate	700 to 1200
5. Yellow sandstone (of Mayo, &c.) with shales and limestone	400 to 2000

COAL-MEASURES.

In South Wales the coal-measures have been ascertained by actual measurement to attain the extraordinary thickness of 12,000 feet; the beds throughout, with the exception of the coal itself, appearing to have been formed in water of moderate depth, during a slow, but perhaps intermittent, depression of the ground, in a region to which rivers were bringing a never-failing supply of muddy sediment and sand. The same area was sometimes covered with vast forests, such as we see in the deltas of great rivers in warm climates, which are liable to be submerged beneath fresh or salt water should the ground sink vertically a few feet.

In one section near Swansea, in South Wales, where the total thickness of strata is 3240 feet, we learn from Sir H. De la Beche that there are ten principal masses of sandstone. One of these is 500 feet thick,

* Sedgwick, Geol. Trans., Second Series, vol. iv.; and Phillips, Geol. of Yorsh. part 2.