

of the Carboniferous system into two main groups, in the way that had been proposed by D'Omalius d'Halloy, was almost universally accepted, and on the suggestion of Dechen the upper group was very often called the *Productive Coal-formation*.

With the fauna and palæontological sub-division of the Carboniferous limestone De Koninck occupied himself for more than fifty years. His monographs of the fossil fauna of the Belgian Carboniferous limestone (1842-44), together with MacCoy's work (1844) on the fossils of the Irish Carboniferous limestone, and the somewhat older monograph by J. Phillips (1836) on the Yorkshire Carboniferous limestone, are still the basis of all European research on the faunas of the Carboniferous limestone. De Koninck began a revision of the Belgian fauna (1878-88), but unfortunately this handsomely illustrated work was not completed. In his first monograph De Koninck drew attention to the difference of the faunas at Tournay and Visé, and thought it might be explained on the assumption that they had belonged to two separate basins of deposition. Afterwards he ascribed the limestone of Visé to a slightly earlier period than that of Tournay, whereas Dumont had in 1830 supposed the strata of Tournay to be the older group.

Gosselet in 1860 distinguished three divisions of the limestone: a Lower group, with *Spirifer Tornacensis* as the leading fossil type; a Middle group, with *Spirifer cuspidatus* and *Goniatites sphæroidalis* as the typical fossils; and an Upper group, with *Productus giganteus* and *undatus* as the typical fossils. The palæontological researches of Dupont (1865-71) have confirmed Dumont's view regarding the relative age of the Carboniferous limestone at Visé and at Tournay, showing that the Tournay limestone is the older.

In England, Phillips had sub-divided the Carboniferous limestone of Yorkshire into three groups: (a) a Lower series of *Limestone Shales or Sandstones*; (b) a Middle series, represented by the *Mountain Limestone*, 2000 feet thick, and containing a rich marine fauna; and (c) an Upper series, called the *Yoredale Beds* of limestones, shales and sandstones, and occasional local coal-seams. In the Harz, in Thuringia, in the Fichtel mountains, the Sudeten mountains, and in the Rhine provinces, the Carboniferous limestone division is almost wholly represented by the mixed Culm facies of shales, greywackes, flagstones, and thin beds of limestone.