

are found the widespread and characteristic Carboniferous Limestone forms *Lithostrotion basaltiforme*, *L. irregulare*, *Fenestella plebeia*, *Athyris Royssii*, *Orthis Michelini*, *O. resupinata*, *Productus aculeatus*, *P. cora*, *P. longispinus*, *P. punctatus*, *P. semireticulatus*, and many more.²³⁸ Prof. T. W. E. David, in summarizing our knowledge of the coal-bearing rocks of New South Wales, gives a thickness of 11,150 feet to the Upper or Permo-Carboniferous series, and 11,300 feet to the Lower Carboniferous. The productive Coal-measures lie in the upper series. In descending order these are: the Newcastle group, Tomago or East Maitland group, and Greta group. The Permo-Carboniferous series is separated by an unconformability, and a strong break in the flora, from the lower division, in the top of which sheets of andesitic dolerite with tuffs occur.²³⁹ Among the marine strata of the Lower Coal-measure series R. D. Oldham found coarse conglomerates, which he compared with those of India as probably indicative of glacial transport.²⁴⁰

In New Zealand the rocks assigned to the Carboniferous system consist, in the upper part, of fine clay-slates, becoming calcareous and passing down into true limestones at the base, from which *Spirifer bisulcatus*, *S. glaber*, *Productus brachythoærus*, etc., have been obtained. They are thus probably Lower Carboniferous; and, though they do not yield coal, they are geologically important from the large share they take in the structure of the great mountain-ranges, and from the occasional abundant development in them of contemporaneous igneous rocks, which are associated with metalliferous deposits.²⁴¹

North America.—Rocks corresponding in geological posi-

²³⁸ See the papers by W. B. Clarke, R. Etheridge jun., De Koninck and Wilkinson cited on p. 1290.

²³⁹ Trans. Austral. Assoc. Soc. vol. ii. 1890, pp. 459-465. O. Feistmantel Mem. Geol. Surv. N. S. Wales, Palæontology, No. 3, 1890, p. 37. The Carboniferous and Permo-Carboniferous corals of New South Wales are described by E. Etheridge jun., op. cit. No. 5, 1891. For recent information on the Australian Coal-fields, see papers by Walker, Robertson & Cox, Trans. Fed. Inst. Min. Eng. ii. 1891, pp. 268, 321; iv. 1893, p. 83. For a detailed account of the Permo-Carboniferous rocks and fossils of Queensland, see R. L. Jack and E. Etheridge jun., "The Geology and Palæontology of Queensland," 1892, chaps. vi.-xxii.

²⁴⁰ Rec. Geol. Surv. India, xix. part i. p. 39.

²⁴¹ Hector's "Handbook of New Zealand," 1883, p. 35. F. W. Hutton, Quart. Journ. Geol. Soc. 1885, p. 200.