

striatus, etc., (b) *Productus cora*, and (c) *Spirifer fasciger* and *Conocardium uralicum*, are probably equivalent to the Millstone Grit and Coal-measures.²³¹ One of the most abundant and persistent organisms of the upper zones is the foraminifer *Fusulina*. The upper Carboniferous rocks on the west side of the Urals shade upward into the base of the Permian system, and show a commingling of Carboniferous and Permian fossils.

Even as far north as **Spitzbergen** a characteristic Carboniferous flora has been obtained, comprising 26 species of plants, half of which are new, but among which we recognize such common forms as *Lepidodendron Sternbergii* and *Cordaitea borassifolius*.²³²

Africa.—The sea in which the brachiopods, corals, and crinoids of the Carboniferous Limestone lived extended across the Mediterranean basin into Africa. Species of *Productus*, *Athyris*, *Spirifer*, *Streptorhynchus*, *Orthis*, *Cyathophyllum*, etc., have been obtained in the western Sahara between Morocco and Timbuctoo.²³³ The red sandstones, which extend into the peninsula of Sinai and thence into Palestine, have yielded stems of *Lepidodendron* and *Sigillaria*, and an intercalated limestone contains *Orthis Michelini* and *Streptorhynchus crenistria*.²³⁴ A number of characteristic brachiopods of the Carboniferous Limestone have also been obtained from the hills in the Egyptian desert to the west of the Gulf of Suez, such as *Rhynchonella pleurodon*, *Productus semireticulatus*, *Spirifer striatus*.²³⁵ In Southern Africa the existence of Carboniferous rocks has long been known. Above certain slates and sandstones (Bokkeveldt) containing fossils with Devonian affinities come the quartzites of Cape Colony, inclosing *Lepidodendron* and other Carboniferous plants. These are unconformably overlain by the "Dwyka Conglomerate," probably in great part of volcanic origin, and the *Ecce* mudstones and sandstones, some 4000 feet thick. After another great unconformability come the Kimberley shales and the "Karoo Beds," which

²³¹ Ann. Soc. Geol. Nord, xvii. 1890, p. 201. Nikitin, Mem. Com. Geol. Russ. v. 1890, No. 5.

²³² Heer, Flora Fossilis Arctica, iv. 1877, p. 4.

²³³ G. Stache, Denksch. Acad. Wiss. Wien, xlv. 1893.

²³⁴ R. Tate, Quart. Journ. Geol. Soc. xxvii. 1871, p. 404.

²³⁵ J. Walther, Zeitsch. Deutsch. Geol. Ges. 1890, p. 419.