Somersetshire, the marine deposits are entirely below those containing terrestrial and freshwater remains.*

Clay-iron-stone.—Bands and nodules of clay-iron-stone are common in coal-measures, and are formed, says Sir H. De la Beche, of carbonate of iron, mingled mechanically with earthy matter, like that constituting the shales. Mr. Hunt, of the Museum of Practical Geology, instituted a series of experiments to illustrate the production of this substance, and found that decomposing vegetable matter, such as would be distributed through all coal strata, prevented the farther oxidation of the proto-salts of iron, and converted the peroxide into protoxide by taking a portion of its oxygen to form carbonic acid. Such carbonic acid, meeting with the protoxide of iron in solution, would unite with it and form a carbonate of iron; and this mingling with fine mud, when the excess of carbonic acid was removed, might form beds or nodules of argillaceous iron-stone.[†]

CHAPTER XXV.

CARBONIFEROUS GROUP-continued.

Coal-fields of the United States—Section of the country between the Atlantic and Mississippi—Position of land in the carboniferous period castward of the Alleghanics—Mechanically formed rocks thinning out westward, and limestones thickening—Uniting of many coal-seams into one thick bed—Horizontal coal at Brownsville, Pennsylvania—Vast extent and continuity of single seams of coal—Ancient river-channel in Forest of Dcan coal-field—Climate of carboniferous period—Insects in coal—Rarity of air-breathing animals—Great number of fossil fish—First discovery of the skeletons of fossil reptiles—Footprints of reptilians—First land-shell found—Rarity of air-breathers, whether vertebrate or invertebrate, in Coal-measures—Mountain limestone—Its corals and marine shells.

It was stated in the last chapter that a great uniformity prevails in the fossil plants of the coal-measures of Europe and North America; and I may add that four-fifths of those collected in Nova Scotia have been identified with European species. Hence the former existence at the remote period under consideration (the carboniferous) of a continent or chain of islands where the Atlantic now rolls its waves seems a fair inference. Nor are there wanting other and independent proofs of such an ancient land situated to the eastward of the present Atlantic coast of North America; for the geologist deduces the same conclusion from the mineral composition of the carboniferous and some older groups of rocks as they are developed on the eastern flanks of the Alleghanies, contrasted with their character in the low country to the westward of those moun tains.

The annexed diagram (fig. 505) will assist the reader in under-

* Phillips ; art. " Geology," Encyc. Metrop. p. 592.

+ Memoirs of Geol. Survey, pp. 51, 255, &c.