

destructible by fire; and the residuum consists of earths usually of the same kind as the substratum of clay, marl, gravel, or rock, on which they are found, together with oxide of iron. "The peat of the chalk counties of England," observes the same writer, "contains much gypsum: but I have found very little in any specimens from Ireland or Scotland, and in general these peats contain very little saline matter."* From the researches of Dr. MacCulloch, it appears that peat is intermediate between simple vegetable matter and lignite, the conversion of peat to lignite being gradual, and being brought about by a prolonged action of water.†

Peat abundant in cold and humid climates. — Peat is sometimes formed on a declivity in mountainous regions, where there is much moisture; but in such situations it rarely, if ever, exceeds four feet in thickness. In bogs, and in low grounds into which alluvial peat is drifted, it is found forty feet thick, and upwards; but in such cases it generally owes one half of its volume to the water which it contains. It has seldom, if ever, been discovered within the tropics; and it rarely occurs in the valleys, even in the south of France and Spain. It abounds more and more, in proportion as we advance farther from the equator, and becomes not only more frequent but more inflammable in northern latitudes.‡

The same phenomenon is repeated in the southern hemisphere. No peat is found in Brazil, nor even in the swampy parts of the country drained by the La Plata on the east side of South America, or in the island of Chiloe on the west; yet when we reach the 45th degree of latitude and examine the Chonos Archipelago or the Falkland Islands, and Tierra del Fuego, we meet with an abundant growth of this substance. Almost all plants contribute here by their decay to the production of peat, even the grasses; but it is a singular fact, says Mr. Darwin, as contrasted with what occurs in Europe, that no kind of moss enters into the composition of the South American peat, which is formed by many plants, but chiefly by that called by Brown *Astelia pumila*.§

I learn from Dr. Forchhammer (1849) that water charged with vegetable matter in solution does not throw down a deposit of peat in countries where the mean temperature of the year is above 43° or 44° Fahrenheit. Frost causes the precipitation of such peaty matter, but in warm climates the attraction of the carbon for the oxygen of the air mechanically mixed with the water increases with the increasing temperature, and the dissolved vegetable matter or humic acid (which is organic matter in a progressive state of decomposition,) being converted into carbonic acid, rises and is absorbed into the atmosphere, and thus disappears.

Extent of surface covered by peat. — There is a vast extent of surface in Europe covered with peat, which, in Ireland, is said to extend over a tenth of the whole island. One of the mosses on the Shannon

* Irish Bog Reports, p. 209.

† System of Geology, vol. ii. p. 353.

‡ Rev. Dr. Rennie on Peat, p. 260.

§ Darwin's Journal, p. 349.; 2d ed. p. 287.