

bottom from its lower dying surface; for the moss has the property of dying at the extremities of the roots as it grows above. It thus gradually takes possession of the pond, and may form beds of great thickness.

In some limestone regions, the Sphagnous mosses are replaced by species of *Hypnum*, as in Iowa. The leaves and stems, branches and stumps, of trees and shrubs, growing over the marshy region or in shallow waters, and any other vegetation present, contribute to the accumulating bed. The fresh-water shells growing in the waters, and the spicules of any sponges, with the insects, and the carcasses and excrements of animals become included. Earthy material also may be blown over the marsh by the winds, or brought by inflowing streams.

In wet parts of Alpine regions, there are various flowering plants which grow in the form of a close turf, and give rise to beds of peat, like the moss. In Fuegia, although not south of the parallel of 56°, there are large marshes of such Alpine plants, the mean temperature being about 40° F. On the Chatham Islands, 380 miles east of New Zealand, peat thus formed has a depth of 50 feet.

The dead and wet vegetable mass slowly undergoes a change in its lower part, becoming brownish black, loose in texture, and often friable, although commonly penetrated with rootlets. The change is sometimes continued until coal is formed; but unlike good coal it still contains usually 25 to 33 per cent of oxygen.

Peat-beds cover large surfaces of some countries, and occasionally have a thickness of 40 or 50 feet. The rate of growth varies with the amount of vegetation, moisture, and other conditions; a foot in depth may form in five to ten years. One tenth of Ireland is covered by them; and one of the "mosses" of the Shannon is stated to be 50 miles long and two or three broad. A marsh near the mouth of the Loire is described by Blavier as more than 50 leagues in circumference. Over many parts of New England and other portions of North America, there are extensive beds, almost every old marsh having more or less peat below. The amount in Massachusetts alone has been estimated to exceed 120,000,000 of cords. The Dismal Swamp, 10 miles by 30 in area, situated on the borders of Virginia and North Carolina, is for the most part a region of very deep peat.

Peat-beds sometimes contain standing trees, and entire skeletons of animals that had sunk in the swamp. The peat-waters have an antiseptic power, and consequently tend to prevent complete decay of the vegetable matter of the peat-bed. Flesh is sometimes changed by the burial into adipocere.

Peat is used for fuel, and also as a fertilizer. When prepared for burning, it is cut into large blocks, and dried in the sun. It is sometimes pressed, in order to serve as fuel for steam-engines. *Muck* is another name for peat, especially for impure kinds, when employed as a manure; any black swamp-earth consisting largely of decomposed vegetable matter is so called.

Beds of marine plants in the rocks of littoral regions are almost unknown. Specimens