

there. (See Book III. Part II. Section iii. § 3.) In the latter case, they may be mingled with inorganic sediment, so as to pass into carbonaceous shale.

Peat—vegetable matter, more or less decomposed and chemically altered, found throughout temperate climates in boggy places where marshy plants grow and decay. It varies from a pale yellow or brown fibrous substance, like turf or compressed hay, in which the plant-remains are abundant and conspicuous, to a compact dark brown or black material, resembling black clay when wet, and some varieties of lignite when dried. The nature and proportions of the constituent elements of peat, after being dried at 100° C., are illustrated by the analysis of an Irish example which gave—carbon, 60·48; hydrogen, 6·10; oxygen, 32·55; nitrogen, 0·88; while the ash was 3·30. There is always a large proportion of water which cannot be driven off even by drying the peat. In the manufacture of compressed peat for fuel this constituent, which of course lessens the value of the peat as compared with an equal weight of coal, is driven off to a great extent by chopping the peat into fine pieces, and thereby exposing a large surface to evaporation. The ash varies in amount from less than 1·00 to more than 65 per cent, and consists of sand, clay, ferric oxide, sulphuric acid, and minute proportions of lime, soda, potash and magnesia.¹⁴¹ Under a pressure of 6000 atmospheres peat is converted into a hard, black, brilliant substance having the physical aspect of coal, and showing no trace of organic structure.¹⁴²

Lignite (Brown Coal)—compact or earthy, compressed and chemically altered vegetable matter, often retaining a lamellar or ligneous texture, with stems showing woody fibre crossing each other in all directions. It varies from pale brown or yellow to deep brown or black. Some shade of brown is the usual color, whence the name *Brown Coal*, by which it is often known. It contains from 55 to 75 per cent of carbon, has a specific gravity of 0·5 to 1·5, burns easily to a light ash with a sooty flame and a strong burned smell. It occurs in beds chiefly among the Tertiary strata, under conditions similar to those in which coal is found in

¹⁴¹ See Senft's "Humus-, Marsch-, Torf- und Limonit-bildungen," Leipzig, 1862. J. J. Früh, "Ueber Torf und Dopplerit, Zürich," 1883, and the various memoirs quoted postea, p. 802.

¹⁴² Spring, Bull. Acad. Roy. Bruxelles, xlix. (1880), p. 367.