

of the Dead Sea. In Trinidad it forms a lake $1\frac{1}{2}$ miles in circumference, which is cool and solid near the shore, but increases in temperature and softness toward the centre.

Graphite.—This mineral occurs in masses of sufficient size and importance to deserve a place in the enumeration of carbonaceous rocks. Its mineralogical characters have already (p. 124) been given. It occurs in distinct lenticular beds, and also diffused in minute scales, through slates, schists, and limestones of the older geological formations, as in Cumberland, Scotland, Canada, and Bohemia. It is likewise found occasionally as the result of the alteration of a coal seam by intrusive basalt, as at New Cumnock in Ayrshire.

5. **FERRUGINOUS.**—The decomposition of vegetable matter in marshy places and shallow lakes gives rise to certain organic acids, which, together with the carbonic acid so generally also present, decompose the ferruginous minerals of rocks and carry away soluble salts of iron. Exposure to the air leads to the rapid decomposition and oxidation of those solutions, which consequently give rise to precipitates, consisting partly of insoluble basic salts and partly of the hydrated ferric oxide. These precipitates, mingled with clay, sand, or other mechanical impurity, and also with dead and decaying organisms, form deposits of iron-ore. Operations of this kind appear to have been in progress from a remote geological antiquity. Hence ironstones with traces of associated organic remains belong to many different geological formations, and are being formed still.¹⁴⁷

Bog Iron-Ore (Lake-ore, *minerai des marais*, *Sumpferz*)—a dark-brown to black, earthy, but sometimes compact mixture of hydrated peroxide of iron, phosphate of iron, and hydrated oxide of manganese, frequently with clay, sand, and organic matter. An ordinary specimen yielded, peroxide of iron, 62.59; oxide of manganese, 8.52; sand, 11.37; phosphoric acid, 1.50; sulphuric acid, traces; water and organic matter, 16.02=100.00. Bog iron-ore may either be formed *in situ* from still water, or may be laid down by currents in lakes. Of the former mode of formation, a familiar illustration is furnished by the "moor-band pan" or hard ferruginous crust, which in boggy places and on some ill-drained land, forms at the bottom of the soil, on the top of a stiff and tolerably impervious subsoil. Abundant bog-iron or lake-ore is obtained from the bottoms of some lakes in Norway and Sweden. It forms everywhere on the

¹⁴⁷ See Senft's work already (p. 250) cited, p. 168; also *postea*, Book III. Part II. Sect. iii.