

pounds, varying from a thin, colorless, watery liquidity to a black, opaque, tar-like viscosity, and in specific gravity from 0.8 to 1.1. The paler, more limpid varieties are generally called *naphtha*, the darker, more viscid kinds mineral tar, while the name *petroleum*, or rock-oil, has been more generally applied to the intermediate kinds. Petroleum occurs sparingly in Europe. A few localities for it are known in Britain. It is found in large quantity along the country stretching from the Carpathians, through Galicia and Moldavia, also at Baku on the Caspian.¹⁴⁰ The most remarkable and abundant display of the substance, however, is in the so-called oil-regions of North America, particularly in Western Canada and Northern Pennsylvania, where vast quantities of it have been obtained in recent years. In Pennsylvania it is found especially in certain porous beds of sandstone or "sand-rocks," which occur as low down as the Old Red Sandstone, or even as the top of the Silurian system. In Canada it is largely present in still lower strata. Its origin in these ancient formations, where it cannot be satisfactorily connected with any destructive distillation of coal, is still an unsolved problem.

Asphalt—a smooth, brittle, pitch-like, black or brownish-black mineral, having a resinous lustre and conchoidal fracture, streak paler than surface of fracture, and specific gravity of 1.0 to 1.68. It melts at about the temperature of boiling water, and can be easily kindled, burning with a bituminous odor and a bright but smoky flame. It is composed chiefly of hydrocarbons, with a variable admixture of oxygen and nitrogen. It occurs sometimes in association with petroleum, of which it may be considered a hardened oxidized form, sometimes as an impregnation filling the pores or chinks of rocks, sometimes in independent beds. In Britain it appears as a product of the destructive distillation of coals and carbonaceous shales by intrusive igneous rocks, as at Binny Quarry, Linlithgowshire, but also in a number of places where its origin is not evident, as in the Cornish and Derbyshire mining districts, and among the dark flagstones of Caithness and Orkney, which are laden with fossil fishes. At Seyssel (Département de l'Ain) it forms a deposit 2500 feet long and 800 feet broad, which yields 1500 tons annually. It exudes in a liquid form from the ground round the borders

¹⁴⁰ Abich, *Jahrb. Geol. Reichsanst.* xxix. (1879), p. 165. Trautschold, *Zeitsch. Deutsch. Geol. Ges.* xxvi. (1874), p. 257. See postea, Book III. Part I. Sect. i. § 2, where other authorities are cited.