

These analyses are exclusive of water, which in the peat amounted to 25.56, and in the lignite to 84.66 per cent.

Anthracite—the most highly mineralized form of vegetation—is an iron-black to velvet-black substance, with a strong metalloid to vitreous lustre, hard and brittle, containing over 90 per cent of carbon, with a specific gravity of 1.35–1.7. It kindles with difficulty, and in a strong draught burns without fusing, smoking, or smelling, but giving out a great heat. It is a coal from which the bituminous parts have been eliminated. It occurs in beds like ordinary coal, but in positions where probably it has been subjected to some change whereby its volatile constituents have been expelled. It is found largely in South Wales, and sparingly in the Scottish coal-fields where the ordinary coal-seams have been approached by intrusive masses of igneous rock. It is largely developed in the great coal-field of Pennsylvania. Some Lower Silurian shales are black from diffused anthracite, and have in consequence led to fruitless searches for coal.

Oil-shale (*Brandschiefer*)—shale containing such a proportion of hydrocarbons as to be capable of yielding mineral oil on slow distillation. This substance occurs as ordinary shales do, in layers or beds, interstratified with other aqueous deposits, as in the Scottish coal-fields. It is in a geological sense true shale, and owes its peculiarity to the quantity of vegetable (or animal) matter which has been preserved among its inorganic constituents. It consists of fissile argillaceous layers, highly impregnated with bituminous matter, passing on one side into common shale, on the other into cannel or parrot coal. The richer varieties yield from 30 to 40 gallons of crude oil to the ton of shale. They may be distinguished from non-bituminous or feebly bituminous shales (throughout the shale districts of Scotland), by the peculiarity that a thin paring curls up in front of the knife, and shows a brown lustrous streak. Some of the oil-shales in the Lothians are crowded with the valves of ostracod crustaceans, besides scales, coprolites, etc., of ganoid fishes. It is possible that the bituminous matter may in some cases have resulted from animal organisms, though the abundance of plant remains indicates that it is probably in most cases of vegetable origin. Under the name “pyroschists” Sterry Hunt classed the clays or shales (of all geological ages) which are hydrocarbonaceous, and yield by distillation volatile hydrocarbons, inflammable gas, etc.

Petroleum—a general term, under which is included a series of natural mineral oils. These are fluid hydrocarbon com-