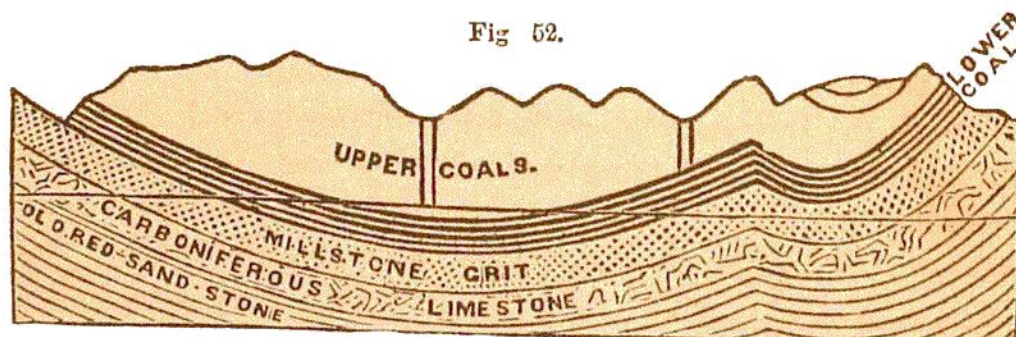


pact heavy mass, igniting with some difficulty. The anthracite of Pennsylvania, of enormous extent, is in the true coal measures, and it is a curious fact, that as we pass westward—that is, recede from the metamorphic and unstratified rocks of the Atlantic coast—the quantity of bitumen increases; so that within a few hundred miles the coal is highly charged with it. The fact makes it extremely probable that the heat, which changed the metamorphic rocks, also drove off the bitumen.

The anthracite of Rhode Island and of Massachusetts, is in what may be called a *metamorphic Coal Field*; that is, the strata have been more acted upon and hardened by heat than is usual. In Rhode Island and in Bristol county in Massachusetts, the fossil remains are still found; but in Worcester, where the bed of coal is seven feet thick, no trace of fossil vegetables has been discovered; and the rocks are considerably hardened and crystalline. The coal also is much more stony, and is partially changed into plumbago.

*Graphite, Plumbago, or Black Lead*, appears to be anthracite which has undergone still further mineralization; at least, in some instances, when coal has been found contiguous to igneous rocks, it is converted into plumbago; and hence such may have been the origin of the whole of it. In the Alps, plumbago is found in a clay slate that lies above the lias. It is also found in the coal series.

All the varieties of coal that have been described occur in the form of seams, or beds, interstratified with sandstones and shales; and most usually there are several seams of coal with rocks between them; the whole being arranged in the form of a basin. Fig. 52 is a sketch of the great coal basin of South Wales, in



Great Britain; which contains twenty-three beds of coal; whose united thickness is ninety-three feet. When we consider how