

more powerful action of those same plutonic causes (heat, and other subterranean agencies) which are capable of converting sedimentary into crystalline rocks may have expelled nearly all the gaseous ingredients from a stratum of coal or anthracite, and turned it into an impure plumbago, while the carboniferous grits and shales were changed into carbonaceous mica-schist, clay-slate, and quartzite. At Little Falls, on the Mohawk River, and elsewhere in the U. S., and at the Falls of Montmorency, and other places in Canada, I have seen the lowest Silurian strata resting unconformably on gneiss and other hypogene formations. But we ought not to be surprised on that account, if we find on the American continent, as in the Swiss Alps and other regions in Europe, strata containing plants of the coal-measures, or of still newer dates, which have acquired the hypogene or metamorphic structure. Near the Atlantic border of the United States, in particular, we should be prepared for such a discovery, for we know that those powerful movements which have given rise to the Appalachian chain, folding and dislocating the solid rocks for a breadth of 150, and a length of more than 1000 miles, and the injection into the eastern portion of the chain, of igneous rocks of the trappean and plutonic order, are phenomena posterior in date to the deposition of the American carboniferous strata. During so long a series of subterranean changes as are implied by these disturbances it may well have happened that considerable masses of the coal-bearing, as well as of more ancient paleozoic strata, should have assumed a crystalline texture.

At a small New England town in the Taconic hills above mentioned I was getting some travelling in-