Desmarest

quartz of the original rock remained unchanged. He was not aware that the difference of chemical composition demonstrates that the melting of granite could never have produced basalt.

These ideas, which we now know to be erroneous, might readily occur to the early observers. It is undoubtedly true that pieces of more or less completely melted granite are to be found among the ejections of old volcanoes, and the inference would not unnaturally suggest itself that if our artificial fires, kindled by the combustion of carbonaceous substances, are sufficient to melt rocks, the far more gigantic conflagrations of such combustible materials, caused by natural processes in the bowels of the earth, when concentrated at one point underneath a volcano, may fuse the surrounding and overlying rocks, and expel streams of molten material. We shall find that Werner adopted this antiquated opinion, and that through him it became predominant over Europe, even after more enlightened conceptions of the subject had been announced. Desmarest does not, indeed, seem to have had at this time, if ever, any very definite conception of the origin of the high temperature within volcanic reservoirs. Nor had chemistry yet afforded much assistance in ascertaining the resemblances and differences among rocks and minerals. His mistakes were thus a faithful reflex of the limited knowledge of the period in which he wrote.

In the second part of his Memoir, Desmarest gives a historical narrative of all that had been written before his time on the subject of basalt. The most interesting and important passages in this retrospect are the com-

156