

which, in so far as they are fundamental, are now universally admitted.”

While Hutton fortified his convictions by constant appeals to the rocks themselves, his disciple Hall tested their truth in the laboratory. It is the boast of Scotland to have led the way in the application of chemical and physical experiment to the elucidation of geological history. It was objected to Hutton's theory, that if basalt and similar rocks had ever been in a melted state, they would now have been seen in the condition of glass or slag, and not with the granular or crystalline texture which they actually possess. Hall demolished this objection by melting basalt into a glass, and then, by slow cooling, reconvert- ing it into a granular substance more or less resembling the original rock. Hutton had maintained that under enormous pressure, such as he conceived must exist beneath the ocean, or deep within the crust of the earth, even limestone itself might be melted without losing its carbonic acid. This was ridiculed by his opponents, on whom he retorted that they “judged of the great operations of the mineral kingdom from having kindled a fire and looked into the bottom of a little crucible.” Hall, however, to whom fire and crucible were congenial implements, resolved to put the question to the test of experiment, and though, out of deference to his master, he delayed his task until after the death of the latter, he did at last succeed in converting limestone, under various great pressures, into a kind of marble, and even in reducing it to complete fusion, in which state it acted powerfully on other rocks. He concluded his elaborate essay on this subject with these words: “This single result affords, I conceive, a strong presumption in favour of the solution which Dr. Hutton has advanced of all the geological phenomena; for the