

phoric acid, ammonia, and organic matter, elements which had been already in great measure abstracted from it by living vegetation, and which are again ready to be taken up by the same organic agents. (2) Carbon-dioxide is here and there largely evolved within the earth's crust, especially in regions of extinct or dormant volcanoes. Subterranean water coming in the way of this gas dissolves it, and thereby obtains increased solvent power. (3) The capacity of water for dissolving mineral substances is augmented by increase of temperature (ante, p. 522). It is conceivable that cold springs, containing a large percentage of mineral solutions, may have acquired this impregnation at a great depth and at a higher temperature. As a rule, however, thermal water, as it cools, deposits its dissolved minerals on the walls of the fissures up which it ascends. Hence, no doubt, the successive layers in mineral veins. (4) Pressure likewise raises the solvent power of water (p. 521). (5) Some of the solutions, due to decompositions effected by the water, increase its ability to accomplish further decompositions (p. 527). Thus the alkaline carbonates, which are among the earliest products, enable it to dissolve silica and decompose silicates. These carbonates likewise promote the decomposition of some sulphates and chlorides. Calcium-carbonate, which is found in the water of most springs, is the result of decomposition, and by its presence leads to the further disintegration of various minerals. "Carbonic acid, bicarbonate of lime, and the alkaline carbonates bring about most of the decompositions and changes in the mineral kingdom. It is a matter of great importance to find that the same substances which give rise to so many decompositions in the mineral kingdom are the chief ingredients in the waters." <sup>82</sup>

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<sup>82</sup> Bischof, "Chem. Geol." i. p. 17.