

which the water must exist at some depth within the crust, its power of penetrating the capillary interstices of rocks must be increased to such a degree as to enable it to become a powerful geological agent.

(2.) Reference has already (p. 196) been made to the presence of minute cavities, containing water and various solutions, in the crystals of many rocks. The water thus imprisoned was obviously inclosed with its gases and saline solutions, at the time when these minerals crystallized out of their parent magma. The quartz of granite is usually full of such water-vesicles. "A thousand millions," says Mr. J. Clifton Ward, "might easily be contained within a cubic inch of quartz, and sometimes the contained water must make up at least 5 per cent of the whole volume of the containing quartz."

Solvent power of water among rocks.—The presence of interstitial water must affect the chemical constitution of rocks. It is now well understood that there is probably no terrestrial substance which, under proper conditions, is not to some extent soluble in water. By an interesting series of experiments, made many years ago by W. B. and H. D. Rogers, it was ascertained that the ordinary mineral constituents of rocks could be dissolved to an appreciable extent even by distilled water, and that the change was accelerated and augmented by the presence of carbonic acid.²⁸ Water, as pure as it ever occurs in a natural state, can hold in solution appreciable proportions of silica, alkali-ferous silicates, and iron oxide, even at ordinary temperatures. The mere presence, therefore, of water within the pores of subterranean rocks cannot but give rise to changes

²⁸ American Journ. Science (2), v. p. 401.