

various kinds of mineral matter, such as layers and nests of quartz, carbonate of lime, carbonate of copper, sulphide of copper, sulphide of lead, oxide of tin, or with other kinds of ores. Various theories have been formed to account for the presence of ores in these cracks. Formerly, the favourite hypothesis was, that they were formed by sublimation from below, somehow or other connected with the internal heat of the earth; and the ores were supposed to have been deposited in the cracks through which the heated vapours passed. A great deal also has been said on the effect of electric currents passing through the rocks, and aiding in depositing along the sides of fissures the minerals which were being carried up by sublimation, or were in solution in waters that found their way into the fissures. I dare not utter any positive statement on the question, but my opinion is that the ores of metals in lodes have generally been deposited from solutions.

We know that water, especially when warm, can take up silica in solution and deposit it, as in the case of the Geysers in Iceland; and we also know that metals may, in some states, be held in solution in water, both warm and cold. This is proved by the accurate results of chemists, who, it is said, have detected silver, gold, and copper in solution in sea water. We must remember that when the lodes or cracks were originally formed, those parts of them that we explore were not so near the surface as we now see them; but in a great many cases they lay deep underneath, covered by thousands of feet of rock that have since been removed by denudation. They were probably, in all cases, channels of subterranean filtration, both in their upper portions that have been removed by denudation, and in the parts originally deeper that now remain,