

universal ocean. He admitted that the crust had been abundantly cracked, but in these cracks he saw no evidence of any subterranean action. His own statement of his views on this subject is sufficiently explicit, and I quote his words: "When the mass of materials of which the rocks were formed by precipitation in the humid way, and which was at first soft and movable, began to sink and dry, fissures must of necessity have been formed, chiefly in those places where the greatest quantity of matter has been heaped up, or where the accumulation of it has formed those elevations which are called mountains."¹ He gave no explanation of the reason why the precipitates of his universal ocean should have gathered more thickly on one part of the bottom than on another. It was enough for himself and his disciples that he was convinced of the fact.

As all rents in the earth's crust were thus mere superficial phenomena resulting from desiccation and the slipping down of material from the sides of mountains, so it was conceived by Werner that, when they were filled up, the mineral matter that was introduced into them could only come from above. He drew no distinction in this respect between what are now called "mineral veins" and "intrusive veins." Veins of granite, of basalt, of porphyry, of quartz, of galena, or of pyrites were all equally chemical precipitates from an overlying sea. He does not appear to have seen any difficulty in understanding how the desiccation and rupture of the rocks were to take place, if the sea still covered them, or how, if they were exposed to the air and evaporation, he was to raise the level of the ocean

¹*Theory of Veins*, § 39.