

probability that the great movements were, as indeed could hardly be otherwise, complicated with many displacements of small masses in different directions. In some instances, as already explained (Vol. I. p. 42.), the striation is in one only direction, marking a great simplicity of movement: this is also the most common case of mineral veins.

Whatever difficulties these phenomena may be thought to present, they are common to all cases of displaced strata, and must be parts of one general investigation. In this sufficient progress has already been made, to assure us that, when the data and measures necessary to form a right conception of the conditions are furnished, the mechanical problems of displacement are not beyond solution.

Filling of the Fissures.

We are thus conducted to that point in the history of veins, which was reached by Von Oppel (in 1769), and are stopped by the same impediment. In his Essay on the Working of Veins (quoted by Werner), he says: — “The natural structure of the globe seems to show us, that after the formation of the primitive and principal secondary mountains, they had suffered great desiccation, and been exposed to violent shocks. In consequence of these changes, the rocks and mountains, which formerly composed one continuous mass, were split asunder: whilst this took place, it might easily happen that one of the rocks split from the other without ceasing to touch it; or these parts might be separated from each other, leaving between them open spaces, which were afterwards filled up, in part at least, with different mineral substances. The greater part of these grand events belong to that part of subterranean natural history, which can only be elucidated by a consideration of the facts which the earth presents to our view; *for all these great revolutions took place at a period long before the globe became habitable to the human species.* But whether fissures and veins were actually formed in the manner we have described, or not, it is no less true