

continue beyond the reach of the deepest mine. Their horizontal extent is various: some veins run 5, 10, or more miles through a country; and, in fact, their termination is not really known, except that they are lost in mere cracks not worth the miner's attention. But so variable is the breadth of veins, that extreme contractions and considerable expansions sometimes confuse all regularity, and render doubtful even the connection of the seemingly disunited parts of such veins. "If we take a vein of 3 or 4 feet to represent a fair average size, it may be only an inch or two wide in one place and 8 or 10 feet in another. Such extremes not unfrequently occur within a few fathoms of each other." * Other veins preserve an almost unvarying breadth and freedom from these perplexing contractions; and we believe these differences of character may be distinctly referred to the natural structure of the rocks, and the movements to which they have been subjected.

Veins, in their descent through the rocks, approach more or less to a vertical position; their deviation from it seldom exceeds 10 degrees in the mining countries of the north of England; but in Cornwall, so rich in complicated phenomena, the underlie, or deviation from the vertical, is supposed by Mr. Fox to average 20 degrees, but seldom to exceed 45. The mechanical theory of these inclinations of veins is yet altogether imperfect; we do not know in what degree these peculiarities depend on original jointed structure of the rocks, nor how to refer their various directions to sudden fractures or gradual pressures, such as Werner pictured to himself. Nor shall we escape from this ignorance, until the directions taken by the veins, or, to speak more accurately, the planes of their fissures, are compared geometrically with the planes of the joints, the planes of stratification, and the local axes of elevation and depression. In the lead mining districts of the North of

* Fox, in the Report of the Polytechnic Society.