

a vein of silver at Uspalata, in the Andes, which is nine feet in thickness throughout its whole extent, and has been traced ninety miles. Smaller veins branch off from each side of it, and penetrate the neighbouring mountains to the distance of thirty miles. It is believed that this vein stretches to the distance of three hundred miles. A vein called the Tidswell Rake, in Derbyshire, extends some miles east and west; it is worked from the surface, and may be seen near the roadside, between Great Hucklow and Tidswell. I was informed in Cornwall, that no vein in that county had been traced in length more than two miles; nor had any vein been worked out in depth. The common width of the veins is from one foot to two feet, but sometimes it exceeds thirty feet.

In Cornwall and Devonshire, and in the mines of Northumberland and Durham, the principal metallic veins range nearly east and west. In the former counties they are called *lodes*, in the latter *right-running veins*. The north and south veins which intersect them are called cross courses: these are seldom productive of ore. In plate VII. fig. 3., the veins *b b c c* are represented as cut through by a cross course. It must be borne in mind that this is a ground plan. The thin cross courses filled with clay are called *fluan*. I was informed by an intelligent proprietor of mines in Cornwall, that these thin cross courses invariably displace the veins, and hold up the water on one side of the vein; but it is most worthy of notice, that a vein which is rich in ore on one side of the *fluan*, will be poor on the other. Query, *Is this connected with the fluan holding up the water?* In Cornwall, the cross courses displace the east and west veins; the displacement is only a few inches in some veins, in others it is several fathoms. On Alston Moor, in Cumberland, a large cross course, called Old Carr's Cross Vein, cuts through two veins, called Goodham Gill Vein, and Grass Field Hill Vein, and has thrown them aside about fifteen or twenty fathoms. When the cross course intersects the east and west veins at right angles, the displacement is generally less, than when it strikes it in an oblique direction. This effect will be more clearly understood by referring to Plate VII. fig. 3.

In Northumberland and Durham, cross courses contain ore, near their junction with powerful veins. In Cornwall, ores of silver and cobalt have been found in some of the cross courses; and at the Botallack mine, north of the Land's End, a powerful cross course, running north and south, is made rich by the junction of east veins, which resemble small rivulets, opening into a river. Their position will be better understood by referring to Plate VII. fig. 6. The direction of the cross course or great vein running north and south, is represented by the letters *N, S*, the direction of the small veins, rich in ore, which open into it, are represented by *e e e*. The cross course is rich in ore, to the distance of twenty or thirty fathoms, on each side of its junction with a vein; but no veins are found branching from the west side of the cross course. The cross course is