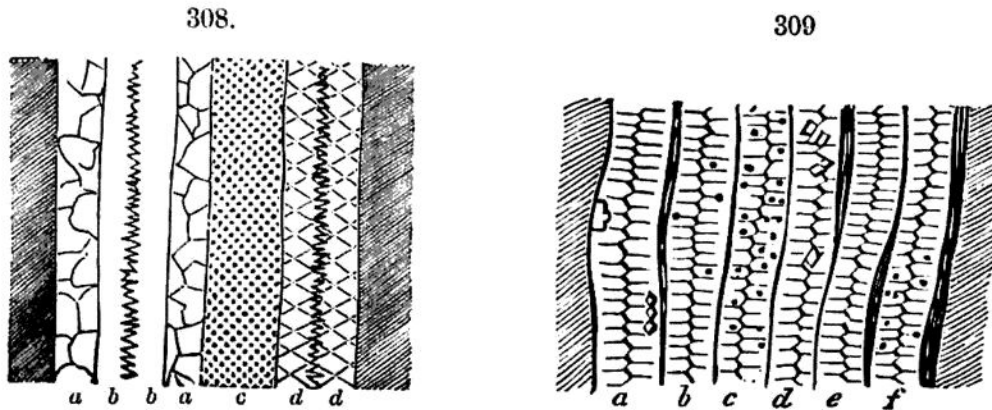


or more sets. Fig. 307 appears as if made up of two veins side by side, *abc* one, and *d* another; two bands *b* are agate bands (uncrystallized quartz), and at *c* are two bands of crystallized quartz. The two sides of the fissure received simultaneously the deposition of agate, and then, over this, the layer of quartz in crystals. If a band or string of ore had been deposited between the two of quartz, as is common, this would have made it an ore-vein. But in the



Compound veins from Cornwall. De la B.

figure, the large band *d* is ore, copper ore; and to make it, the fissure was reopened along the wall to the left, and the ore introduced without any "gangue" material. Fig. 308 represents a triple vein, *abba* one, *c* a second, and *dd* the third; and Fig. 309, a sextuple vein, or one that was opened six times for new vein-making. Each of the six parts is called a *comb* in miners' language. In one great vein, opened at Freiburg, the layer consisted of blende (ZnS), quartz, fluorite (CaF), pyrite, galena, barite, calcite, each two or three times repeated, the layers nearly corresponding on either side of the middle seam.

The ore of veins occurs in one or several of the bands; or is gathered along the center; or collected in the broader portions or swellings of a vein, making nests; or distributed through the gangue.

Most quartz veins cutting through crystalline rocks are actually simple, though begun in each case by deposition against the walls. Gold-bearing veins are commonly ordinary quartz veins, but the gold is usually in minute, invisible scales through the quartz, though occasionally in threads of crystals, and "nuggets" or larger masses. In the case of the gold-bearing quartz, crushing, and then either washing or amalgamation, are required to obtain the gold. Gold-bearing quartz veins contain also more or less pyrite in which gold is often present profitably, and also often galena (PbS) and sphalerite or blende (ZnS). A region of chloritic or hydromica schist having interlaminating and intersecting veins of quartz, in which occur some pyrite and galena, is almost always a gold region.

The banded structure of many veins is one of the points in which veins differ from dikes. But they are often like dikes in having contact minerals in the walls of the veins, due to the same process which filled the vein.