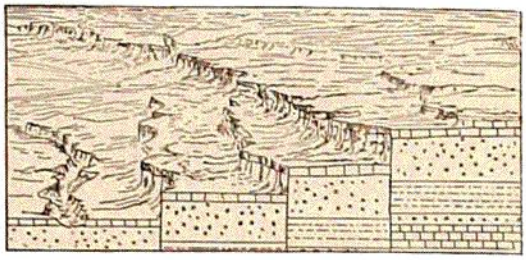
Figs. 118, 119, 120 illustrate a flexure-fracture and fault along the syncline of an overthrust flexure in the Alps, some thousands of feet in span, as figured by Heim. It will be observed that the strata became bent without

116.

Succession of monoclines; section across a branching fault. Powell, '75.

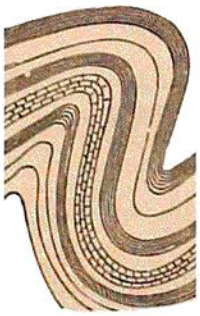
117.



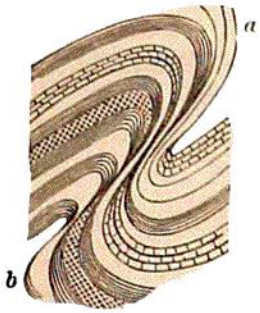
Section across a branching fault. Powell, '75.

breaking till the flexures of Fig. 118 were produced, illustrating thus the important fact that the bending of flexed rocks has in all cases gone forward with extreme slowness. The plane of the flexure from *a* to *b*, between the

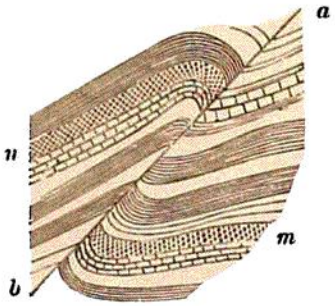
118.



119.



120.



A fold passing into a fault, from the Alps. Heim, '78.

anticline and syncline, is the plane of greatest weakness, and hence the fracture. There is usually much stretching, also, and thinning, of the beds along the fracture. The fault at the bend in Fig. 120 is an upthrust fault, the stratum *m* to the right being the same with *n* to the left; and the existing distance between the two is a measure of the extent to which the strata were pushed up the sloping fault-plane. Where the flexures are closely crowded together, the faults may divide up a bed into many parts; and if a bed of iron ore is in the series, its parts may be so far displaced and cut up into so small sections as to make it unprofitable to attempt to follow it.

The great upthrust faults made along fractures many thousands of feet in depth, like those of the Appalachians, have usually taken place along fracture-planes of small dip — between 20° and 45°. Downthrow or downthrust faults, however great the displacement, may occur along fracture-planes of all slopes to verticality.

The region of the great elevations produced along such faults in the Appalachians has been reduced in general to a level below that of the