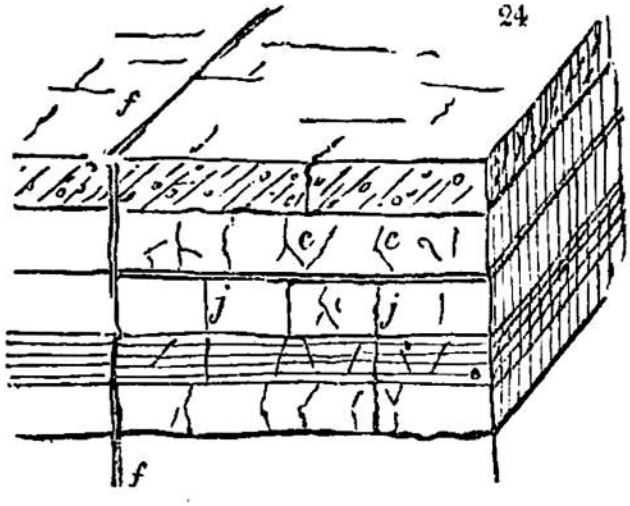
Their direction is very irregular, and there is no doubt that in many cases they are the effect of mechanical strain or tension in the mass of rocks which accompanied the displacement of the rocks. Near the anticlinal axes of Ribblesdale, sparry cracks are wonderfully numerous; but away from these axes the level beds are little marked by such accidents.

Besides these irregular cracks (*c*), which often do not pass through the whole mass of a bed, are *joints* (*j*) which divide at least one bed, and often several, and which exhibit some regularity of direction; these are so situated in the different beds, have such diversity of slopes, irregularity of number, openness, and other characters, and are so abundant in situations far from lines and points of displacement, as to leave no doubt that they are due to a very general cause.

Amongst these joints, some more open and extended, than others, passing through a greater number of beds, dividing a whole rock, or even a considerable portion of a formation, may be distinguished as fissures (*f*) or *master joints*. The diagram, *fig.* 24., is intended to convey a correct notion of these several divisional planes.

24



Viewed on a horizontal plan, joints frequently end in fissures; and these latter commonly exhibit a great degree of local symmetry. In the mountain limestone districts of the north of England, the arrangement of the fissures has been ascertained to be correctly repre-