

(5) **E a r t h q u a k e s.**—The existence of joints has been referred to the results of the earth-waves generated during earthquakes, the rocks through which the waves pass being exposed to such powerful alternate compression and tension as to rupture them.*

Joints form natural lines for the passage downward and upward of subterranean water. They likewise furnish an effective lodgment for the action of frost, which wedges off blocks of rock in the manner already described (p. 698). As they serve, in conjunction with bedding, to divide stratified rocks into large quadrangular blocks, their influence in the weathering of these rocks is seen in the symmetrical and architectural as well as splintered, dislocated aspects so familiar in the scenery of sandstone and limestone districts.

2. **In Massive (Igneous) Rocks.**—While in stratified rocks the divisional planes consist of lines of bedding and of joint,

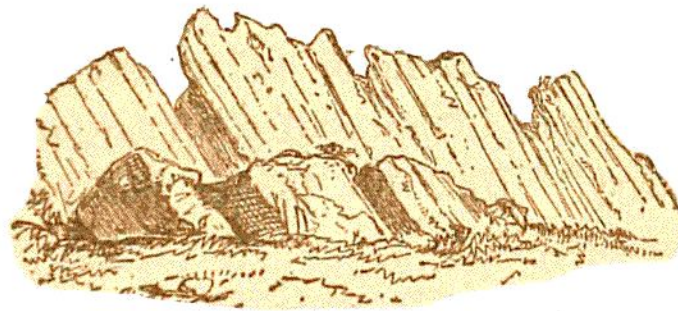


Fig. 228.—Porphyry, near Clynog Vawr, Caernarvonshire, divided into slabs by a system of close parallel joints (B.).

cutting each other usually at a high, if not a right angle; in massive (igneous) rocks, they include joints only; and as these do not, as a rule, present the same parallelism as lines of bedding, unstratified rocks, even though as full of joints, have not the regularity of arrangement of stratified formations. Some massive rocks indeed may have one system of divisional planes so largely developed as to acquire

* W. O. Crosby, Proc. Boston Soc. Nat. Hist. xxii. 1882, p. 72.