on the large scale among rock-masses. The direction of cleavage usually remains persistent over considerable regions, and, as was shown by Sedgwick,[1] corresponds, on the whole, with the strike of the rocks. It is, however, independent of bedding. Among curved rocks, the cleavage-planes may be seen traversing the plications without sensible deflection from their normal direction, parallelism, and high angle. They must thus be strictly later than these plications. But their general coincidence with the trend of the axes of folding serves to indicate a community of origin for cleavage and folding, as concomitant though not absolutely simultaneous effects of the lateral compression of rocks.[2] Among curved strata, the planes of cleavage some-

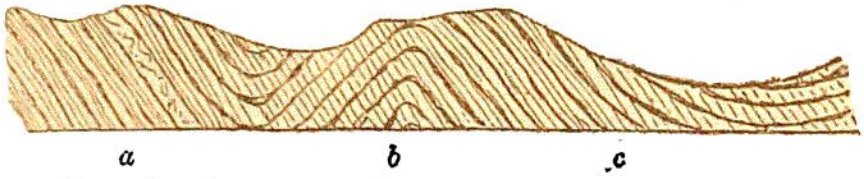

Fig. 257.—Curved and contorted Devonian Rocks, near Ilfracombe (*B.*). Bedding and cleavage planes are coincident at *a* and *c*, but nearly at right angles at *b*.

times coincide with, and are sometimes at right angles to the planes of bedding, according to the angles of the folding (Fig. 257). The persistence of cleavage-planes across even the most diverse kinds of rock, both sedimentary and igneous, was first described by Sedgwick. Jukes also pointed out that over the whole of the south of Ireland the trend of the cleavage seldom departs 10° from the normal direction E. 25° N., no matter what may be the

[1] "On the Structure of large Mineral Masses," Trans. Geol. Soc. 2d ser. iii. 1835—an admirable memoir, in which the structure of a great cleavage region is clearly and graphically described. Phillips gave a good summary of our knowledge up to 1856 in his "Report on Cleavage" in the British Assoc. Rep. for that year. But the most exhaustive memoir on the subject is that by Mr. A. Harker in the Reports of the British Association for 1885, p. 813, where copious references to the bibliography will be found. See also papers by the Rev. O. Fisher in Geol. Mag. 1884–85, and his "Physics of the Earth's Crust."

[2] Harker, Brit. Assoc. Rep. 1885, p. 852.