

prior to the appearance of that rock; at least they often dip toward it, or lie horizontally or undulate upon it, apparently without any reference to movements which it could have produced. As Jukes showed, the Silurian strata are underlain by a vast mass of Cambrian rocks, all of which must have been invaded by the granite before it could have reached its present horizon. He infers that the granite must have slowly and irregularly eaten its way upward through the Silurian rocks, absorbing much of them into its own mass as it rose. For a mile or more, the stratified beds next the granite have been altered into mica-schist, and are pierced by numerous veins from the invading rock. Within the margin of the granitic mass, belts or rounded irregular patches of schist (*b b*) are inclosed; but in the central tracts, where the granite is widest, and where therefore we may suppose the deepest parts of the mass have been laid bare, no such included patches of altered rock occur. From the manner in which the schistose belt is disposed round the granite, it is evident that the upper surface of the latter rock, where it extends beneath the schists, must be very uneven. Doubtless the granite rises in some places much nearer to the present surface of the ground than at others, and sends out veins and strings which do not appear above ground. If, as Jukes supposed, a thousand feet of the schists could be restored at some parts of the granite belt, no doubt the belt would there be entirely buried; or if, on the other hand, the same thickness of rock could be stripped off some parts of the band of schist, the solid granite underneath would be laid bare. The extent of granite surface exposed must thus be largely determined by the amount of denudation, and by the angle at which the upper surface of the granite is inclined beneath the schists. Where the inclination is high, prolonged denudation will evidently do comparatively little in widening the belt.<sup>8</sup> But where the slope is gentle, and especially where the surface undulates, the removal, for some distance, of a comparatively slight thickness of rock, may uncover a large breadth of underlying granite. Portions of the metamorphosed rocks left by denudation upon the surface of the granite boss, are relics of the deep cover under which the granite no doubt originally lay, and, being tougher than the latter rock, they have resisted waste so as now to cap hills and protect the granite

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<sup>8</sup> See Jukes's "Manual of Geology," 3d ed. p. 243.