

shows a district in which a series of tuffs and breccias (*b b*) traversed by dikes (*a a*) is covered unconformably by a newer series of deposits (*d*). Properly to appreciate the relations and history of the rocks, we must bear in mind that originally they may have presented some such outline as in Fig. 277, where the present surface (that of Fig. 276) down to which denudation has proceeded is represented by the dotted line *n s.*¹ We may therefore *à priori* expect to encounter different levels of eruptivity, some rocks being portions of sheets that solidified at the surface, others form-

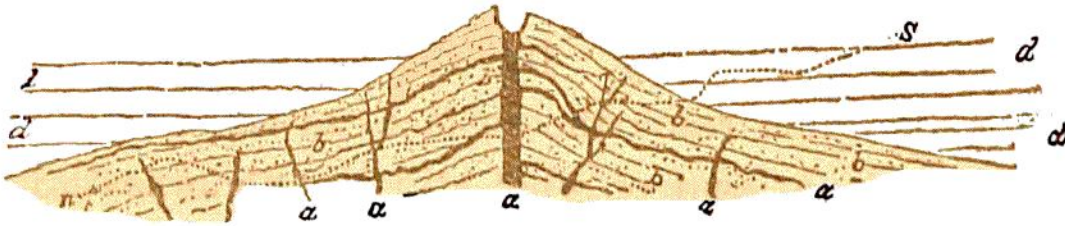


Fig. 277.—Restored outline of the original form of ground in Fig. 276 (B).

ing parts of injected sheets or of the pipe or column that connected the superficial sheets with the internal lava-reservoir. We may infer that many masses of molten rock, after being driven so far upward, came to rest without ever finding their way to the surface. It cannot always be affirmed that a given mass of intrusive igneous rock, now denuded and exposed at the surface, was ever connected with any superficial manifestation of volcanic action.

Now there will obviously be, as a general rule, some difference in texture, if not in composition, between the superficial and the deep-seated masses, and this difference is of so much importance in the interpretation of the history of volcanic action that it ought to be clearly kept in view. Those portions of an eruptive mass which consolidated at some depth are generally more coarsely crystalline than

¹ De la Beche, "Geol. Observer," p. 561.