

ciated with them. Thus the derivation of the gneisses from amorphous igneous rocks may be regarded as established beyond dispute.

As illustrative of the conclusion that, while there seems good reason to believe that the segregated or coarsely-banded structure indicates a separation and crystallization of materials out of a still unconsolidated igneous magma, the predominant foliation structures which traverse these bands were produced by powerful mechanical movements, such a section as that represented in Fig. 328 may be cited. The mineral bands have there been violently plicated, and have been cut through by a succession of thrust-planes (*l t*), by which they have been pushed forward and piled over

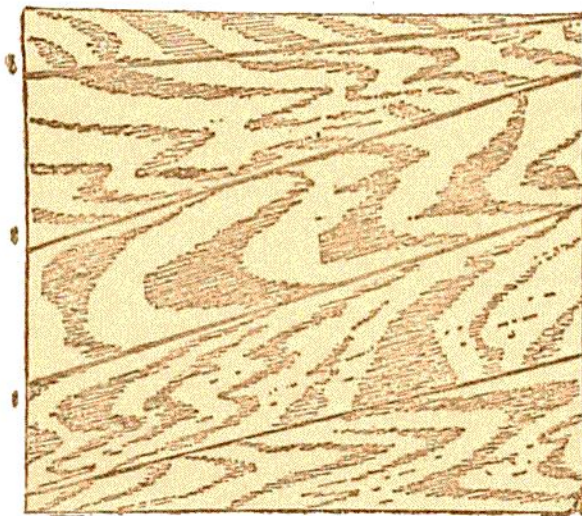


Fig. 328.<sup>29</sup>—Section of Lewisian gneiss, embracing a vertical surface of several hundred square yards.

each other. The foliation thus superinduced follows the direction of movement, and crosses indiscriminately the boundaries of the different aggregates of original materials. Viewed from a little distance the darker and lighter crumpled layers form a striking feature on many coast cliffs, but they are seen to be abruptly truncated above and below by thrust-planes parallel to which the gneiss has sometimes been crushed and rolled out into flaggy sheets (Fig. 329). These ancient structures are similar to those so abundantly developed in the younger or eastern gneisses already (p. 1037) referred to. They seem to make it certain that after the consolidation of the complex assemblage of igneous rocks

<sup>29</sup> Figs. 328, 331, 334 are taken by permission of the Council of the Geological Society from the Report of the Geological Survey published in the Quarterly Journal of the Society for August, 1888.