

B. CRYSTALLINE, INCLUDING ROCKS FORMED FROM CHEMICAL PRECIPITATION

This division consists mainly of chemical deposits, but includes also some which, originally formed of organic calcareous débris, have acquired a crystalline structure. The rocks included in it occur as laminæ and beds, usually intercalated among clastic formations, such as sandstone and shale. Sometimes they attain a thickness of many thousand feet, with hardly any interstratification of mechanically derived sediment. They are being formed abundantly at the present time by mineral springs and on the floor of inland seas; while on the bottom of lakes and of the main ocean, calcareous organic accumulations are in progress, which will doubtless eventually acquire a thoroughly crystalline structure like that of many limestones.

Ice.—So large an area of the earth's surface is covered with ice, that this substance deserves notice among geological formations. Ice is commonly and conveniently classified in two divisions, snow-ice and water-ice, according as it results from the compression and alternate melting and freezing of fallen snow, or from the freezing of the surface or bottom of sheets of water.

Snow-ice (see Book III. Part II. Sect. ii. § 5) is of two kinds. 1st, Fallen snow on mountain slopes above the snow-line gradually assumes a granular structure. The little crystalline needles and stars of ice are melted and frozen into rounded granules which form a more or less compact mass known in Switzerland as *Névé* or *Firn*. 2d, When the granular névé slowly slides down into the valleys, it acquires a more compact crystalline structure and becomes *glacier-ice*. According to the researches of F. Klocke, glacier-ice is, throughout its mass, an irregular aggregate of distinct crystalline grains, the boundaries of which form the minute capillary fissures so often described.¹⁵¹ Its structure thus closely corresponds to that of marble (p. 263).

¹⁵¹ Neues Jahrb. 1881 (i.), p. 23. Grad and Dupré (Ann. Club. Alp. Franc. (1874) show how the characteristic structure of glacier-ice may be revealed by allowing colored solutions to permeate it.