The change, if produced through the magnesium chloride (MgCl), required the removal of ½ Ca by the chlorine of an equivalent amount of Mg. If this is the true theory of dolomyte-making, then great shallow areas or basins of salt-pan character must have existed in past time over various parts of the continental area and have been a result of the oscillations of the water level. Such magnesian limestones contain few fossils, partly because of the fine trituration, and partly, no doubt, because of the unusually briny condition of the waters. The frequent alternation of calcite and dolomyte strata would indicate alternations between the clear-water and salt-pan conditions. Dolomization, in the case of such beds, has often taken place after partial or complete consolidation; for many dolomytes are exceedingly porous, because of the *diminished* bulk of the dolomyte — one eighth to one tenth. T. S. Hunt made the porosity of several Canadian Lower Silurian dolomytes, 10 to 13½ per cent (1866).

Local cases of alteration are well known. Adolf Schmidt mentions such at the lead mines of Missouri, which he attributes (following Bischof) to the action of magnesium bicarbonate.

In a memoir on the famous dolomyte region of the Tyrol, Dölter and Hörnes, geologists of Vienna, discuss this subject at length, and reach the following conclusions: (1) Some large limestones, weakly dolomitic, may have been made out of those organic secretions which contain a little magnesia; (2) minor cases of the production of dolomyte are due to the alteration of limestone through the introduction of magnesium carbonate; but (3) the larger part of dolomyte formations, whether more or less rich in magnesia, have been formed from organic calcareous secretions through the action of the magnesium salts of sea water, especially the chloride.

(*d*) *Making of clay and soil.* — Pure white clay, or kaolin, used in making porcelain, is sometimes in strata of wide extent; and the common impure river-valley clays, employed in brick-making and coarser pottery, have no less value. One of the largest kaolin beds in New England, at New Marlboro, in Berkshire County, Mass., was probably made by the decomposition of the orthoclase that was disseminated through quartzyte, and its removal by percolating waters to the bed of a streamlet; for in other localities in Berkshire this result is now going on from the same quartzyte. The absence of black mica and other iron-bearing minerals insured its being white.

(*e*) *The blanching of red and rusty rocks* by waters containing carbonic acid and organic acids or materials is a common and important effect. Colored clays are drained of their iron oxide and whitened by percolating waters. A deeply rusted block of basalt or granite may thus be made to have a white exterior an inch or more deep.

(*f*) *Again, the impurities of a limestone are sometimes made available for soil,* by the continued action of carbonated waters, and the removal thereby of the calcareous part. Shells and corals contain about 0·5 per cent of impurity, consisting chiefly of iron oxide and alumina; and the action of the rains over the hills of coral sand-rock on Bermuda, through centuries past, has left a residuum of *red earth* which is the soil of the island, as Wyville Thomson suggested. The *red ooze* or mud over much of the ocean's bottom below 2500 fathoms is due chiefly to the removal, in like manner, of the calcium carbonate of the Globigerinæ and other Rhizopods, in consequence of an excess of carbonic acid in the bottom or abyssal waters. The life of the sea-bottom