

magnesia. This reaction I have been unable to verify. A solution of gypsum in distilled water was made to percolate slowly through a column of several inches of finely powdered dolomite, and after ten filtrations, occupying as many days, no perceptible amount of sulphate of magnesia had been formed. Solutions of gypsum were then digested for many months with pulverized dolomite, and also with crystalline carbonate of magnesia, but with similar negative results; nor did the substitution of a solution of chlorid of calcium lead to the formation of any soluble magnesian salt. Solutions of gypsum were then impregnated with carbonic acid, and allowed to remain in contact with pulverized dolomite and with magnesite, as before, during six months of the warm season, when only inappreciable traces of magnesia were taken into solution. These experiments show that no decomposition of dissolved gypsum is effected by native carbonate of magnesia, or by the double carbonate of lime and magnesia, at ordinary temperature.

§ 21. I find however that hydrated carbonate of magnesia readily and completely decomposes a solution of gypsum when agitated with it, with formation of carbonate of lime and sulphate of magnesia; and the same result is produced with the native hydrate of magnesia when mingled with a solution of gypsum in presence of carbonic acid. Now there may be dolomites which contain an admixture of hydro-carbonate of magnesia, as there certainly are others which like predazzite, are penetrated with hydrate of magnesia. The reaction between solutions of gypsum and such magnesian limestones, (with the intervention, in the case of predazzite, of atmospheric carbonic acid,) would suffice to explain the results obtained by Mitscherlich, and the appearance in certain cases of sulphate of magnesia as an efflorescence on dolomites. In the experiments above described, the nearly pure crystalline dolomites from the Guelph and Niagara formations were made use of.

§ 22. When sea-water is exposed to spontaneous evaporation, the whole of the lime which it contains separates in the form of sulphate, gypsum being insoluble in a concentrated brine, and subsequently the greater portion of the chlorid of sodium crystallises out in a nearly pure state. The mother-liquor of specific gravity 1.24, having lost about four fifths of its chlorid of sodium, still contains a large proportion of sulphate of magnesia. If the evaporation is continued at the ordinary temperature, till a density of 1.32 is attained, about one half of the magnesian sulphate separates, mixed