

brines whose analyses are given in the above table, and such we suppose to have been their origin. The complete absence of sulphates from many of these waters points to the separation of large quantities of earthy sulphates in the Lower Silurian strata from which these saline springs issue; and the presence in many of the dolomitic beds of the Calciferous sand-rock of abundantly disseminated small masses of gypsum, is an evidence of the elimination of the sulphates by evaporation. The frequent occurrence of crystalline masses of sulphate of strontian in the Chazy and Black River limestones of this region, is also to be noted as another means by which the sulphates were separated from the waters of the Lower Silurian seas. From the proportions of chlorid of sodium, varying from about one third to more than two thirds of the solid contents of the above waters, it is apparent that in most cases the process of evaporation had gone so far as to separate a part of the common salt; and thus successive strata of this ancient saliferous formation must be impregnated with solid or dissolved salts of unlike composition. The mingling of these in varying proportions affords the only apparent explanation of the differences in the relative amounts of the several chlorids in waters from the same region, and even from adjacent sources. These differences are seen on comparing the waters from the different wells of St. Catherine's, Hallowell and Kingston, with each other.

§ 38. The great solubility of chlorid of calcium renders it difficult to suppose its separation from the mother-liquors so as to be deposited in a solid state in the strata. The same remark applies to chlorid of magnesium. It is however to be remarked that the double chlorid of potassium and magnesium (carnallite) is decomposed by deliquescence into solid chlorid of potassium and a solution of chlorid of magnesium; and thus strata like those which at Stassfurth contain large quantities of carnallite (§ 22), might give rise to solutions of magnesian chlorid. This however would require the presence of a large amount of chlorid of potassium in the early seas. It will be observed by referring to the analyses above given, that the chlorid of magnesium sometimes surpasses in amount the chlorid of calcium; and sometimes, on the contrary, is equal to only one half or one fourth of the latter salt. While it is not impossible that the predominance of the magnesian chlorid in some waters may be traced to the decomposition of carnallite, it is undoubtedly in most cases connected with the action of solutions of carbonate of soda; the effect of which, as already pointed out, is to first