

magnesium chloride. But if the waters subjected to concentration are alkaline, the result will be very different. As concentration proceeds the preponderating sodium carbonate tends to throw not only calcium but also magnesium out of solution, and the final liquors will consist almost entirely of sodium salts, viz. carbonate, sulphate, and chloride. In certain rare instances boric acid originating from volcanic vents has found its way into lakes. Its presence in solution seems to be confined to highly saline alkaline lakes, and this may be due to the fact that where calcium and magnesium are present in appreciable quantity, boric acid would tend to be eliminated as insoluble borates; whereas in alkaline concentrates it would persist in solution as borax (sodium pyroborate).

During the world's history many lakes must have dried up completely after accumulating a large store of salts. In moderately humid climates this cannot have happened often, but when it did happen, an inverse process of re-solution must have gradually set in. Thus the saline residues would lose first magnesium and then sodium salts, whilst calcium sulphate and carbonate might well survive into recent geological periods. Rock-salt deposits generally, and especially the sodio-magnesian-potassic deposits of the North German Plain, are monuments of bygone lakes of sea-water, cut off from the ocean; probably, however, these are instances not of desiccation to the last drop, but of copious deposition of salts followed by withdrawal of the mother-liquors. Far less resistance is offered to the formation and survival of saline residues in arid regions; many such, of very variable composition, are known to exist, some of them being exploited commercially, especially in the Nile Valley, Central Asia, and the United States. Since arid regions, as we have seen above, are apt to produce alkaline waters, these deposits consist as a rule largely or mainly of sodium carbonate, occasionally with a considerable proportion of borax.

Of a very different class of solute, which is never absent in lake waters, viz. the dissolved gases, there is but little to be said. Whilst this department of hydrology has received a great deal of attention from oceanographers, experimental data as to the gases dissolved in lakes are, so far, scanty and isolated; and it is to be admitted that the subject bristles with physical and chemical complications, and presents no small experimental difficulties. Pure water in contact with air takes up oxygen, nitrogen, and carbon dioxide up to definite limits of saturation. The amount of each gas taken up is directly proportional to its partial pressure, decreases, though not in a simple relation, with increasing temperature, and lastly depends on a solubility constant which varies somewhat widely from gas to gas. As an effect of their respective solubilities, oxygen and nitrogen go into solution