

circumstances more favourable to the formation of this body than those which exist at the bottom of the ocean. The temperature is generally little over that of melting ice; the pressure often exceeds several hundred atmospheres; whilst the carbonic acid, being produced gradually, and coming *in statu nascendis* in contact with the saline solution, is in the condition most favourable for easily entering into chemical combination.

The amount of this salt formed depending on the pressure, it is evident that, on bringing up a sample of water from a great depth, a part of the carbonic acid, which was bound before, will become free under the atmospheric pressure; and, moreover, as the amount decomposed varies with the time, it is evident that the amount of free carbonic acid, obtained by boiling *in vacuo*, will vary with the depths from which the sample was obtained, with the time it stands before boiling, with the temperature to which it is exposed during boiling, and with the duration of that operation. Hence it is easy to see how, assuming the body above mentioned to have been formed, Dr. Jacobsen found that the quantity of carbonic acid obtained by boiling *in vacuo* was no measure of the amount actually present, and that even portions of the same sample gave discordant results.

It will be seen from the above remarks that solutions of carbonic acid in sea-water and in blood resemble each other in almost every particular; only in the latter the retaining body is phosphate of soda, whilst in the former it is sulphate of magnesia, both of which contain constitutional water. The physical conditions, under which carbonic acid is eliminated from the blood and from sea-water, are also very similar.

In the investigation of the behaviour of carbonic acid and of other gases to saline solutions, there is a practically unlimited field for useful research. The determination of the absorption coefficients of sulphate of magnesia solution for carbonic acid alone, under varying conditions of temperature, pressure, concentration, and duration of action, would afford interesting and profitable occupation for more than one chemist.