

free to move in any mode or direction, their energies or circumstances may require.

Hence, as there are two conditions of the solid aggregation of the molecules of matter; namely, aggregation depending on the cohesion of the molecules of the same kind of matter; and aggregation depending on the union of the molecules of different kinds of matter: so there must be likewise two modes of repulsion; namely, homogeneous repulsion, or the mutual repulsion of the molecules of the same kind of matter, which is opposed to cohesion, and from whence chiefly arises the gaseous condition of bodies; and heterogeneous repulsion, or the mutual repulsion of molecules chemically repellent, which prevents such molecules from uniting together chemically.

But here a question arises: What is the molecular arrangement of bodies in the state of *vapour*; the state which water is liable to assume at all temperatures below 212° ; for instance, at 32° ? According to an hypothesis, to be presently mentioned, a given volume of steam, at 212° , the boiling temperature of water, contains the same number of self-repulsive molecules, as a similar volume of air under the same temperature and pressure, and therefore has the same elasticity. But the elasticity of the vapour of water at its freezing temperature, 32° , is only