

aqueous vapour, which causes the formation of a vacuum above the liquid; and as the boiling point is lowered by the removal of external pressure, the water contained in the flask is again put into a state of ebullition.

It will follow, as a necessary result from these experiments and facts, that an increased pressure will raise the boiling point. There is, indeed, no limit to the temperature to which water may be raised, except that which regulates the amount of pressure under control; water may, in fact, be made red-hot without boiling.

These facts have an evident connexion with results obtained by travellers. It has been frequently observed by those who have visited mountainous districts, that the boiling point of liquids varies in proportion to the height of the place above the level of the sea. From what has been already said concerning the atmosphere, we know that the pressure decreases with the length of the column, and we may hence deduce the reason for the lowering of the boiling point. The converse of this is also true, and in deep mines the boiling point must be proportionally raised.

As in the process of vaporization a large amount of heat must be combined with the particles of the body, an equal amount must be given up by vapours when they return to a liquid state. The vapour produced by a cubic inch of water will occupy a space of seventeen hundred cubic inches; but all the latent heat it contains must be abstracted before it can be condensed into a liquid.

Philosophers have made a distinction between vapours and gases, although there is a sufficient analogy in their physical condition to warrant the supposition that they have the same origin. The gases were probably separated from the vapours, under the supposition that they could never take the liquid form, and were therefore sometimes called the permanently elastic fluids. There is, however, now no doubt, that the gases as well as the vapours may be compelled to take a liquid state; and that, to present them in this form, it is only necessary to abstract from them their latent heat. The greatest amount of cold ever produced is unable to effect this result. Dr. Faraday has succeeded in condensing some of them by another process, and has thus afforded an argument for the inference that others might be reduced, could the obstacles to experiment be removed. It is a well-established fact, that