

quently used by meteorologists than any other, and is more accurate, though it requires a greater time to register an observation. The delicacy of this instrument is very remarkable, a circumstance which gives it a value to the experimenter which the student can scarcely appreciate.

We have already proved that, in the formation of vapour by ebullition, there must always be a considerable absorption of heat. In the production of vapour by evaporation, this is equally true, whatever may be the temperature of the liquid at the time. There are many interesting experiments by which this fact may be proved. If the bulb of a thermometer be surrounded by a wet sponge, and exposed to the action of the sun, the thermometer will rapidly fall; and the same result will be produced if it be covered with ether, a substance which evaporates very quickly. For the production of vapour, under all circumstances, heat is required, and in these experiments it can only be obtained by abstracting from the bodies in contact with it, and from its own substance, the sensible heat which they possess.

The same process is going on in nature on a large scale. When, by the action of the solar rays, vapour rises from the surface of water or from damp districts, the temperature of the atmosphere immediately resting upon that portion of the earth is consequently lowered; for, in order to produce the vaporous state, the bodies near to, or in connexion with the liquid, must be robbed of their sensible heat.

There is a very interesting experiment connected with this subject, which is generally observed with surprise by those who are unacquainted with its cause. If some ether be poured upon the surface of water in a flat shallow vessel, and placed under the receiver of an airpump, the air being withdrawn, the ether will boil, and the water will freeze. These apparently opposite results are evidently produced by the same cause, the vapour formed from the ether. The boiling point of the ether is lowered by the removal of atmospheric pressure; vaporization goes on rapidly; the sensible heat of the water is abstracted to form the vapour, and at last so much is taken away, that, being reduced to the freezing point, it is consolidated.

Dr. Wollaston invented an instrument called a cryophorus, which illustrates the same principle. This instrument is a glass tube, having a bulb at each end, at right angles to its