

and *ice*: snow being apparently frozen vapour, aggregated by a confused action of crystalline laws; and ice being water in its fluid state, solidified by the same crystalline forces. The impression of these agents on the animal feelings is generally unpleasant, and we are in the habit of considering them as symptoms of the power of winter to interrupt that state of the elements in which they are subservient to life. Yet, even in this form, they are not without their uses.* “Snow and ice are bad conductors of cold; and when the ground is covered with snow, or the surface of the soil or of water is frozen, the roots or bulbs of plants beneath are protected by the congealed water from the influence of the atmosphere, the temperature of which, in northern winters, is usually very much below the freezing point; and this water becomes the first nourishment of the plant in early spring. The expansion of water during its congelation, at which time its volume increases one-twelfth, and its contraction in bulk during a thaw, tend to pulverize the soil, to separate its parts from each other, and to make it more permeable to the influence of the air.” In consequence of the same slowness in the conduction of heat which snow thus possesses, the arctic traveller finds his bed of snow of no intolerable coldness; the Esquimaux is sheltered from the inclemency of the season in his snow hut, and travels rapidly and agreeably over the frozen surface of the sea. The uses of those arrangements, which at first appear productive only of pain and inconvenience, are well suited to give confidence and hope to our researches for such usefulness in every part of the creation. They have thus a peculiar value in adding connexion and universality to our perception of beneficial design.

7. There is a peculiar circumstance still to be noticed in the changes from ice to water and from water to steam. These changes take place at a

* Loudon, 1214.