

which it is constantly surrounded. One of the principal of these agents is heat; and it may be interesting to state a few instances as illustrations. Animals, when alive, have the power of resisting a degree of heat which in a dead state would absolutely roast them. Some French philosophers, a number of years ago, placed themselves in an oven, heated to the ordinary degree for baking bread, for a sufficient time to enable the roasting of a joint of meat to commence, without suffering any fatal consequence. Persons frequently labour in factories, mines, and within the torrid zone in the open air, under a degree of heat far exceeding the natural temperature of the blood, without having that temperature sensibly affected; and this is done even without any seeming injury to health, or any other inconvenience than a continued and copious perspiration.

On the other hand, we find that the vital power of animals enables them to endure excessive cold, without materially injuring their health. Whenever the temperature of the air falls below the freezing point, and water and several other fluids are converted into solids, the blood of living bodies does not cease to flow, the animal fluids being removed beyond the ordinary laws of matter by the hidden agency of life. Arctic travellers have proved that in a temperature below the freezing point of mercury, animal heat suffers no sensible diminution, and human beings can perform their accustomed duties. So exceedingly tenacious is the vital principle in some of the lower kinds of animals—such as fish, for instance—that a large portion of their fluids may be actually frozen, and yet their activity may afterwards be restored by the application of warmth. There are, however, many animals to which an excessively low temperature is wholly unsuited, and even destructive. Nature, in such instances, provides an efficient remedy. In cold latitudes, all such animals either migrate or hibernate during the rigours of winter. In the latter case, the torpor of the creature may be likened unto death, yet the circulation does not wholly cease—the vital principle is dormant, not extinct, since the genial temperature of returning spring awakens these sleepers to renewed activity and their wonted enjoyments.

There is a substance secreted in the stomach of the living animal, possessing a prodigious solvent power—the gastric juice. This fluid readily dissolves meat and all kinds of food, yet it never acts upon the living organs with which it comes in contact—so powerfully does the vital force resist the strongest agents of decomposition. Even the vegetable kingdom is not an exception. The hardy trees of our forests resist the intensest cold of our Canadian winters, without having, under ordinary circumstances, their vitality affected. The astonishing vitality of some kinds of seeds is a fact well known. Seeds buried in the earth for count-

less ages, and placed beyond the reach of light and air, have preserved unimpaired the vital principle; for no sooner are they disinterred, and exposed to the influences of air and moisture, than vegetation at once commences.

“Death, as well as life, is a law of nature; and life, with all its powers, is but the gift of a season. The organized fabric, so marvellously formed, contains within itself the germs of decay. The circulating fluids become more thick, the texture more rigid, and the vital organs less fitted to perform their functions. The balance is lost between the waste of the system and the means of supplying its parts with nourishment; and thus, independently of all external injury, the time arrives when the mechanism of the body can no longer work with the vigour required to maintain the animal functions.” The body, when deprived of the vital force, becomes at once subjected to those chemical agents by which it had been constantly surrounded, and which are now enabled to effect its entire decomposition. This marvellous change sooner or later awaits every living thing. Man himself, having been originally formed out of the dust of the ground, when the Creator “breathed into him the breath of life,” yields up at last his spirit to Him who gave it, and mingles his ashes with common earth!

We have extended these remarks beyond what we intended at the outset. If, however, any of our readers should be induced thereby to regard with a higher interest the works and laws of an omnipotent Creator, and thus bring their minds more in harmony with His will, our seeming digression will not have been without its use. The future papers in this series will embrace, 1st, the Composition of Soils, with their improvement and management; 2nd, the Composition of Plants and Animals; 3rd, the Composition of Manures.

## ON THE DOMESTICATED ANIMALS OF THE FARM.

NO. II.

The question as to the origin of species, and the progressive development of organic life on the surface of our planet, is one by far too extensive and complicated for us to discuss within our necessarily restricted limits. Nor indeed is it at all necessary that we should, so far as any really useful or practical purpose is concerned. It would appear from the fossil remains, both of plants and animals, imbedded in the various rock formations of the earth's crust, that a most astonishing series of changes has been going on since the original creation of the world, not only in reference to the distribution of heat, land, and water, but also of vegetable and animal tribes that have been successively called into existence. Not only have species, but entire genera of organic beings ceased to exist,