

and as I have passed the dwellings of farmers I have noticed that their herds of cows were very often standing out exposed to the bleak winds, with their backs humped up, their rumps to the wind, their heads low down, and their feet in a friendly proximity to each other; slowly raising a hoof occasionally to relieve the steady pressure, as in expectation of staying there all day, as doubtless many of them do.

It will not require a very extended knowledge of physiology to divine some of the effects which must follow such a daily exposure of herds through the long tedious winters of this latitude. They will get some good from the sun when it shines, while they endure the bleak winds that blow. The former is only occasional, the latter almost constant. Sunshine is an uncertain reliance for keeping cattle warm or for counteracting the borean blasts of our snowy winters. Standing all day enveloped in an atmosphere 50 to 60 degrees or more, below the temperature of their own bodies, heat is rapidly absorbed away from the whole exterior by the cold air and is carried off and lost. From this exposure several effects follow, one of which is that by chilling the whole surface the skin becomes so cold as to close the millions of pores it contains for the escape of the insensible perspiration through which much of the bodily waste should be cast out. When the pores are thus closed the waste is retained to the injury of health and vigor. Cows thus exposed all winter have their systems become foul by the unnatural retention of the constant bodily waste, and in extreme cases become actually sickened and weak. Digestion becomes impaired and food enough is not digested to maintain health and strength and flesh. Often the horns and extremities become cold, the coat stares and feels rough, the appetite fails, and the eyes grow dim and the nose dry, and the neighbourhood is scoured for information how to restore a "lost cud," or to cure the "tail ail" or the "horn ail," or some other "ail," which is

the effect of prolonged exposure. But by and by—along toward spring—the cows come in, and if they "do well" will at length recover their vigour, for the milk glands acting as they do as a scavenger of the body, will gradually carry off the waste which should have escaped through the skin and eventually cleanse the system and restore health, and the careless dairyman may not even suspect that there has been anything wrong unless, perchance, he wonders why the milk tastes so strong and "cowey," or why his spring butter or cheese is so much inferior to that of other seasons. Whether the careless dairymen sees, in all this, anything wrong or not, the *thinking* dairymen must know that cows thus exposed cannot be expected to do what they would if better cared for.

Animal life depends on maintaining a specific temperature of body. If the body is cooled below the living standard, the lost heat must be restored at once or life becomes extinct. Nature has made provision in case of necessity for restoring lost heat by a temporary draft upon the fat and flesh of the body, which in the end must be paid back to the body in extra food. Every degree of heat lost by exposing a herd to needless cold must be compensated for by additional food. This costs, and makes milk expensive, and occasions a leak in the profits of the dairy, to what extent we will presently see. Error in wintering cows is not confined to exposure to wintry winds during the day. It consists also in exposure during the night. Many of the dairy barns which I see in travelling through the country are made by siding, consisting of a single course of boards nailed perpendicularly upon a frame, with cracks between wide enough to admit so much wind as to keep the temperature of the stable nearly the same as that outside. A stable with cracks in the sides and doors and windows and floors so open that every alternate pressure and lull in the wind is felt by the cows within it, is a poor place for wintering dairy cattle.