THE PHYSIOLOGY OF DIGESTION.

The following remarks from the *Montreal Transcript*, may be advantageously read, as a supplement to the article on winter management and feeding of stock, which appeared in our February number. We are obliged to our contemporary for the correction of an inacuracy, which had escaped our observation. We employed the word *stomach* in too loose a sense; the lungs are the appropriate organs for renovating the blood, by exposing it to the action of the Oxygen of the air, by means of respiration; a simple and beautiful contrivance that is intimately concerned in the sustentation of animal heat.

We extract the following valuable article from the *Canadian Agriculturalist*, (Toronto) for February. Farmers ought to know, though they do not generally, that the expenditure of fat, by an animal in developing heat from the lungs and skin, is precisely that which would keep the place at the same temperature if converted into candles. The enormous consumption of train oil, by Laplanders and Esquimaux, and the consumption of oil or lard of any kind near the tropics; the appetite for fat meat acquired by exposure to sharp air and wind, which rapidly carries of the heat from the body, and the inability to eat anything but the fibrous and gelatinous parts of the meat by persons confined to warm rooms; the consumption of fat in winter by bears and other hybernating animals;—from these causes, the fact was suspected, but it was reserved for Liebeg to demonstrate it by chemical analysis. Perhaps we rather over stated the case, for if the fat is burned in the animals body, none of the heat is wasted, while if it were burned outside of it, some of it would be wasted. But the principle is, that if all the heat could be economised, to produce it would require the same amount of fat to be "burned," as chemists literally style it, whether the heat be developed by flaming, as in a candle, or by the action of the capillaries of the lungs on the blood, which carries it to that important organ from the absorbents of the bowels, or if those fail in supply, from the stores in the body; that is, either prevent the animal getting fat, or if food fail, make it leaner by converting the fat into heat.

Nor are the remarks as to ventilation less important. It is almost as pernicious to cattle as to human beings, to keep them warm by limiting the supply of pure air. The want of ventilation produces in cattle, complaints closely analogous to typhus and consumption in man. A collection of highly animalised vapours is poison to the nerves. The stomach then does its work imperfectly, and food passes through indifferently digested. The contents even of a root house, will perish if there is not means of escape for the gases.

The difficulty is to combine ventilation with heat, and to keep the temperature equable, and that is not very easy in a climate where the fluctuation is so great as this, and an animal cannot so easily change his coat as its owner can his. We are informed by the President of the Montreal Agricultural Society, whose success in raising the finest sheep is well known, that he adopts the plan of leaving it to the discretion of the animals. He finds them a warm covered pen, not however artificially warmed, for sheep have a very warm covering of their own, and leaves them free to take the fresh air when they please, by going into an inclosure well littered, which protects their feet.

The best animals require the most care in this respect, just as a thorough-bred racer, to be kept in condition, requires more grooming than a Shetland or Canadian poney; not that they or any other animals, particularly cows and pigs, are worse of good grooming. We remember about twenty, or five and twenty years ago, when the Teedsdale breed of cattle found their way from the plains of Durham, into the more moist and mountainous county of Cumberland, the hill farmers admitted that the short-horns were much better animals when fattened, and gave more return for their meat; but they said, what was true, that the long-horn was a much hardier animal, was less subject to disease, and starved over a late spring better than the other. They soon however, began to see this was no argument for keeping an inferior breed of cattle, but one for better farming. Accordingly they improved their farm buildings and their cultivation, and now an original unimproved long-horn is rarely seen, except on lands too cold and barren for any thing better.

There is in Canada a curious instance of the general application of the principles of vital chemistry. The lumberers, it is well known, are fed upon fat pork, pork so fat that it cannot be found in any quantity in this country, but is imported from the United States. That is not altogether a matter of taste, it is one of economy, pecuniary and physiological. They want the oil of the fat to enable them to resist the cold, and would consume an enormous quantity of lean pork, of which the fibrin and gelatine in the muscle and membrane, does not supply the materials of combustion so largely. They commence by total abstinence, and in about a fortnight the smell of spirituous liquors become *positively odious* and disgusting to them. As the season advances they commence eating the fat pork raw, and prefer it in that state, and will not relish it cooked. So we have been assured by a gentleman of unquestionable veracity.

The reason is plain. Alcohol, whatever be its merits or demerits in other respects, is a great supporter of combustion. The cooking of the pork would diminish the element they principally want, the oil or lard. And besides, it would do another thing; it would have the same effect as boiling down meat into soup or *bouilli*, it would make it too absorbable, enter into, and leave the system too rapidly. So that on precisely the *same principles on which* a man who has a