

and health, provided all else save that one be sufficiently supplied. This is a very different question. Again, ever since Liebig's classification of food into plastic or nutritive and respiratory or calorific, some most important questions in connection with it have engaged the attention of physiologists. Amongst them are these:—Is any food destined to the production of heat without being concerned in the repair of tissues—that is, is any portion of the food directly burnt in the blood? Is any portion of albuminous food directly calorific, that is, burnt in the blood without forming tissue?—Experiments were performed upon rats and a hawk. The animals were fed upon different diets, and the experiments may be divided into three classes accordingly. In one class the diet was a non-nitrogenous one, consisting of equal parts by weight of arrowroot, sago, tapioca, lard and suet; for this mixture was found upon analysis to yield only 22 per cent. of nitrogen. In another class the diet was a nitrogenous one. It consisted of lean veal from which every visible particle of fat had been carefully removed. This yielded upon analysis only 1.55 per cent. of fat. In the third class the diet was a mixed one. It consisted of a combination of the two former diets. From these experiments the following conclusions are drawn:—Nitrogenous materials are not only calorific, but, at least under some circumstances, sufficiently so to maintain alone the requisite temperature. It is in the highest degree probable that, under certain circumstances, nitrogenous materials may prove directly calorific without forming tissue. Non-nitrogenous substances are at least under some circumstances, directly calorific without entering into the composition of tissue of any kind. While non-nitrogenous food only is taken, all the nitrogen which is excreted in the urine, and more, may be accounted for by the disintegration of the original tissues, without assuming that any fraction is assimilated from any other source. While life cannot be maintained without nitrogenous food, even though every other kind be abundantly supplied, death in this case being due to loss of tissue, life and even health and the normal temperature can be maintained, at least for a long period, upon a diet almost exclusively nitrogenous, with proper inorganic substances in which there exist only a small fraction of non-nitrogenous matter. Such a minute proportion of fat must be but a poor representative of non-nitrogenous food. Moreover in these experiments some of the rats sustained a loss of weight considerably above 40 per cent. When their temperature is maintained from external sources, or when they are freely supplied with calorific food, warm blooded animals may die rather from waste than loss of temperature, as perhaps is the case with cold blooded animals when they are starved. Lastly, in these experiments the significant fact appeared, that while the

weight, strength and general condition of the animals varied very widely under the different diets to which they are subjected, no considerable fluctuation was observed in their temperature. Even the slight variation from time to time recorded seemed rather to result from other causes than to depend directly on the food.—*W. S. Savory, in Proceedings of Royal Society.*

South Australian Farming.

Among the several flourishing colonies of Australasia, that of South Australia seems to take the precedence in a purely Agricultural point of view. It not only sustains immense herds and flocks, but has been very successful in the cultivation of the cereals and root crops. Some of the finest wheat in the world has been produced in this, and the adjacent colony of Victoria. We are happy to hear of the prosperity of our fellow colonists in that distant part of the Empire, and our readers will be interested in the following article from the last numbers of the *Mark Lane Express*;

The last overland mail has brought us some interesting details from South Australia, which seem to mark the growing progress of this important and rising colony. The high position which it has recently taken by the awards conferred by the Jurors at the International Exhibition has led to a demand for information on the part of the public respecting its resources and present condition. The statistical details just taken in the colony furnish most *apropos* all that is required with regard to its land, crops and live stock.

From these official returns it appears that at the close of 1861 the total quantity of land alienated from the Crown, in South Australia, amounted to 2,379,048 acres, of which 1,393,672 acres were in the occupation of the proprietors themselves. As respects average price per acre, with the exception of 1861 which shows a little advance in price as well as in quantity sold, the sum realized has been gradually falling away for several years. Of late the acquirement of land has outstripped the increase of population, until at the end of 1861 the lands alienated from the Crown in this colony amounted to 182 acres for every man, woman, and child in the province. The lands alienated in Victoria amount to but five acres per head of the population; so that the people of South Australia own, in proportion to their numbers, nearly four times as much land as the people of Victoria. The average extent of holdings throughout the colony of Victoria in 1859 was 218 acres,