

to endeavour to raise new varieties of the potatoe.

FOOD OF ANIMALS,

Fermentation, which may be regarded as a sort of cooking afforded spontaneously by nature, adds greatly to the nutritive qualities of the substances which undergo this process. It has long been recommended to allow the barley, intended to fatten cattle, to germinate, and this may be regarded at the first step in the process of fermentation, which the grain undergoes when used for making beer. By this means, the saccharine principle becomes more fully developed, while the food is unquestionably made more digestible and nutritious. Hence, cattle-dealers seek with avidity, and employ with great advantage, the residue of breweries, distilleries, and starch manufactories. A part of the grain thus prepared, or its refuse, is used largely for feeding cattle in Belgium, Alsace, and generally in the immediate neighbourhood of all large manufacturing towns. The nutritive properties of the food are further augmented by rendering it sour, or, at least, it tends in this state to render the digestive function more energetic. Hence, the farinaceous substances used for food, especially when it is intended to fatten the cattle, are made in a great number of places to undergo acetous fermentation. Indeed, all the modes of preparation already enumerated are but little useful to animals destined for hard labour. Seasoning renders the food more agreeable to their taste, more digestible, and therefore more profitable. Common salt is probably the most powerful and useful of all substances for this purpose, and hence it is employed almost everywhere with advantage. It sharpens the appetite, excites to drink, facilitates digestion, renders the flesh of animals intended for the table, of a superior quality, and either promotes, or supplies the acidity induced by the second stage of fermentation. All mammalia seek salt with as much avidity in their wild state as in that of domestication, and show a degree of pleasure, which is a sure index of its utility when mixed with their food, and of its power of correcting the hurtful qualities of their aliment when it happens by some accident to have become vitiated.

In addition to those precautions, which are essential to the proper selection and preparation of food for the domestic animals, it is of great importance to regulate the rations or quantity of food distributed to them at intervals, in order that they may be rendered as profitable as possible. The quantity of food ought always to be in proportion to their age, state of health, the violence of their exercise, and final destination, always observing, at the same time, the general principle, that the quantity of the food must be more considerable when it is less substantial, as

any diminution in its nutritive qualities can only be compensated by a proportional increase of its quantity. It is always impossible to determine, in a fixed and positive manner, how much of each kind of food an animal should consume in a given time, because this depends upon a great number of circumstances relative to its species, its race or breed, the peculiar constitution of the individual, its employment, as well as its age and state of health. The daily allowances further change with the very variable nature of their food, the different ways in which it is administered, the state of the atmosphere, the season of the year, and several other circumstances, all of which should be taken into consideration before we can determine their proper daily rations with any degree of accuracy. Hence result the various and contradictory opinions emitted on the subject by most writers who have attempted to fix quantities. Some have laid down, as a principle, that certain domestic animals will daily consume their weight of watery food, such as turnips, beet-root, or green clover; while others have fixed for the same animals a fourth part of their weight of cabbages, carrots, and parsnips, and a fifth or sixth of beet-root, potatoes, and Jerusalem artichokes. There must be, however, a great variation, according to the different circumstances just enumerated. It appears to us that all these matters should be regulated by particular and individual trials, and be left wholly to experience. This is of more real use than the futile attempts made in most practical books to fix quantities, and which only serve to demonstrate the real ignorance of the persons attempting to enforce them. Physiologists, and all who have studied this matter properly, know very well, that although there are certain well-ascertained general laws which regulate the entire animal economy, each individual possesses a peculiar constitution, or *idiosyncrasy*; which more or less serves to modify these laws. Hence we frequently find a disparity of effects resulting from the same apparent or real cause, and these variations show themselves in the quantity of food which animals consume, as well as on a great many other occasions, the explanation of which can only be obtained on the principles already explained.

Along with the really nutritive food, there must always be mixed a certain quantity of balast, that is, of some coarse and slightly nutritious food, otherwise the sides of the stomach, as well as the intestines, will not be sufficiently distended and stimulated, so as to perform completely the functions for which nature intended them. Unless this condition is rigorously attended to, the digestion, elaboration, and assimilation of the nutritive juices, will always be incomplete, even in healthy and well-constituted animals. It is therefore, a very important error to overload the stomachs of these animals with any