

buminoids are the most valuable, also, because they have certain important nutritive functions to perform, for which no other class of substances can answer. The fat, starch and sugar are more valuable than the fibre, in part because a much smaller expenditure of the vital forces of the animal is required to assimilate them, and convert them into a part of its own substance.

Carefully conducted experiments have shown that in order to get the most profitable results from the use of fodder, there should be, firstly, a certain amount of dry substance given to the animal; that is, supposing all the fodder supplied each day to be thoroughly dried, by exposure for a considerable time to the temperature at which water boils, the weight of this dried product should bear a certain proportion to the weight of the animal. Further, in this weight of dried fodder there should be a certain relation between the respective amounts, first, of the albuminoids or nitrogenous substances, second, the fat, and third, the soluble non-nitrogenous substances. It has also been determined that the relative proportions of these three substances should vary according to the purpose for which the animal is used, whether for draft, for milk or for fattening.

For instance, it appears to result from these experiments that for 1,000 pounds of live weight, a milch cow can daily use up profitably from 22 to 30 pounds of dry substance, and which should not contain less than 2.5 pounds of nitrogenous substances, nor more than 3.1 pounds; and it should contain also, from 0.8 to 1 pound of fat, and 12 to 15 pounds of soluble non-nitrogenous substances, the remainder of the dry substance consisting mainly of fibre, and non-volatile matters. It appears, further, on comparing the proportion between the nitrogenous substance and the sum of the soluble non-nitrogenous substances, and two and a half times the amount of fat, that there is a certain relation between these quantities which is most advantageous; it is that of 1 to from 5 to 6.

The reason for all this is, that while a supply of all these substances is essential to the health of the animal, and while some one of them can perhaps perform the function of another in the animal economy, provided the one is supplied in superabundance