

CLEANLINESS IN ANIMALS is of the utmost importance. It is impossible for any of the domestic animals to do their best unless their skins are free from dirt, and in a fresh and healthy condition. It is of the utmost importance that they be not allowed to accumulate a winter coat of clotted manure; and it is at least very desirable that they be daily thoroughly carded or brushed from head to foot, whenever sufficient labor can be commanded. Better keep fewer animals well groomed than to allow the herd to remain in a condition in which it cannot make the best use of the expensive food it consumes.

*Regularity*, especially in feeding and watering, is very important. Animals will always thrive best when the hours of feeding are regularly established, so that they will come with full appetite to each meal. In establishments where feeding is done by the clock, the animals will lie quietly down until very nearly the time for feeding. As the hour approaches they will get up, eager and expectant, ready to attack their rations with good appetite. If they are fed sometimes at long, sometimes at short intervals, they will eat less, will chew the cud less contentedly, and will be generally restless and uneasy, expecting something to be given them whenever a man enters the stables, and when food is given them, eating it much more daintily.

*Temperature*.—Probably the first use that the animal organism makes of food consumed is to appropriate it to maintaining the proper temperature of the body. Heat is, to a certain extent, constantly given off in respiration: air thrown out from the lungs is always warmer than when taken in. The additional heat is manufactured in the system, by the union of certain elements of the food with the oxygen of the air inhaled. There is very little difference in the temperature of the air breathed out in cold weather and in warm, in cold stables and in warm ones. If the air of the stable is at 50°, and is exhaled at 99°, it has taken 49° of heat from the system; while if it was taken in at zero, it would have taken 99° from the system. Probably this illustration is not scientifically exact, but it sufficiently exhibits the principle. The extra amount of heat required to raise the breath to the standard temperature is produced by the consumption of parts of the food, which, if not so wasted, might have gone to form fat or butter; hence we see the importance of protecting our stock from undue exposure to the cold. The animal is surrounded by warm air, that is to say, the spaces in its hairy covering are filled with air of which the temperature is elevated by the escape of heat from the body. When this air is once sufficiently warmed, the animal's coat preventing its rapid change or circulation, it loses its heat but slowly, but if a draft of air or a gale of wind is allowed to agitate this blanket, its warm air is carried away and the body constantly parts with more heat, in order to warm the colder fresh supply. The heat used in this way is formed by the oxidation of elements of the food in precisely the same manner as in the case of respiration; consequently, the more we protect our animals against the rapid circulation of cold air, the more we reduce this waste of the heat-producing elements which it is our object to convert into fat.

While, therefore, fresh air should be regularly supplied, all unnecessary loss of heat should be avoided.

*Exercise*.—It is difficult to determine what amount of exercise different animals require. A large stock breeder, who has a valuable herd of Ayrshire cattle, ties his cows in winter quarters early in November, and they never untie them again, except for calving, until the spring pastures are ready for turning out. Some of his animals remain fastened by the neck nearly six months at a time, yet they come out in spring in superb condition, apparently not at all injured by their long repose. It may be in deference to an idea that systematic exercise is generally given to dairy cattle, but without having any positive reason for doing so, we prefer that animals should be loose in the yard for a few hours on every pleasant day during the winter. Such a course certainly does no harm, and it constitutes a sort of return to a natural condition, which seems to me very desirable.

Horses, certainly, and probably sheep also, are benefited by regular exercise whenever the weather is not too cold.