

USE OF SALT IN THE FOOD OF CATTLE.

The following are extracts from a recent prize essay on common salt, by Dr. Phipson, of England :—

The use of salt in the food of cattle must not be looked upon as a direct producer of flesh, so much as a necessary element of the economy, without which animals are apt to perish from disease, but with which the body is kept in a normal and healthy state. Not many years ago a German agriculturist, Uberacker, brought forward an experiment which is in direct accordance with this opinion. Wishing to obtain some exact notion of the influence which salt exercised upon his sheep, the flocks of which lived upon a low, damp pasture-land, and received habitually a certain dose of salt, he fixed upon ten sheep, and struck off their usual allowance of salt. This remarkable experiment was continued for three years, with the following results :—In the first year five of the ten died of rot and worms ; in this year the remainder of the flock, 450 head, lost only four sheep. The second year a new lot of ten sheep, deprived of salt, lost seven individuals ; the remainder of the flock, 364 head, lost five only ; a little later, the other three died also from diarrhea. The third year was very rainy. Sixteen sheep were selected, and deprived of salt. The whole of them died in the course of the year of rot and vermicular pneumonia.

In the Brazils and Columbia, flocks may be annihilated by being deprived of salt. M. Garriott, member of the Agricultural Society of Lyons, assures us that the milk of cows subjected to a daily allowance of salt is richer in butter and cheese than when these same cows are deprived of salt.

Sir John Sinclair, to whom agriculture owes much useful information, has observed that the habitual use of salt has a marked influence in improving the quantity and the quality of the wool of sheep.

Many English agriculturists have proved, by direct experiments, that a regular distribution of salt to cattle is especially useful in preventing hoove (meteorization), caused by feeding cattle with leguminous vegetables. And there exists no doubt among those who have tried it, that when employed in proper quantity it increases the appetite, stimulates digestion, keeps up the normal supply of salt in the blood, improves the wool or hair of the cattle, prevents disease, and, moreover, enables the agriculturist to fatten cattle upon food which they would not enjoy without it were previously mixed up with salt.

But there is another important consideration with regard to the regular distribution of salt to cattle : namely, its influence in preventing disease. Its daily use becomes of serious consequence when flocks and herds are menaced with those epidemic attacks which too frequently ravage a whole country at once, when a proper use of salt would either prevent them entirely, or at least reduce them to less disastrous proportions. During one of these epidemics, which sprang up about the year 1840, in the East of Europe, the almost wild cattle of the Ukraine, Podolia and Hungary, were struck down in much greater numbers than those of Silesia and Bohemia, where the cattle-breeders habitually distribute salt to their beasts. Advancing towards the West, this scourge diminished in intensity, and finally ceased to show itself in Germany, where particular care is bestowed upon cattle, and where salt has been for many years constantly employed.

In Great Britain, in the best-farmed districts, we find the allowance of salt oscillating around the subjoined figures, taken as a center of basis :—

ALLOWANCE OF SALT PER DIEM.	
Calf, six months old.....	1 ounce
Bullock or cow, one year old.....	3 "
●xen, fattening.....	6 "
Milch cow.....	4 "

HORSES.—It is generally admitted, wherever salt forms habitually a portion of the horse's diet, that this animal amply repays the slight additional expense or trouble thus incurred. To mix salt with the food of the horse, colt, ass or mule, is a frequent practice in England and America. In these countries the usual allowance for a full-grown horse of middle height, is about 2 ounces per diem. In Belgium, the quantity of salt appropriated to a full-grown horse by the Government is little more than 1 ounce per diem.

SHEEP.—The Romans gave to their flocks of sheep,

every fifth day, an allowance of salt amounting to about half an ounce per head ; and this is precisely the quantity which is still employed in England and Saxony daily, for sheep full-grown and of ordinary size. Numerous experiments have proved that salt is more beneficial to sheep than to any species of cattle.

PIGS.—The best proportion to adopt as a basis appears to be about two-thirds of an ounce per diem for full-grown pigs.

In administering salt, unless it be used as medicine, the more intimately it is mixed with the food, the better. This is not an easy matter with fodder, especially that which has been salted to preserve it, in which case we must endeavor to make a rough estimate of the amount of salt in a given weight of fodder, in order not to administer an injurious excess. In farms where oil or rapeseed is given in powder, this being rather an indigestible food, the allowance of salt should be mixed with it, in preference to any other fodder.

It should be borne in mind that an excess of salt is injurious to any animal ; and that is why the preceding figures are given as a kind of practical guide. An excess of salt produces irritation and inflammation of the mucous membrane, and causes several kinds of skin disease, especially in sheep. With horses an excess of salt has been known to produce dysentery ; and in oxen diseases of the blood. Salt should never be given to cattle when a deficiency of food does not enable them to receive abundance of nourishment ; in which case we excite appetite without satisfying it, and the animals lose flesh rapidly. Salt is to be prohibited, also, wherever congestion of any important organ is observed, or where we have perceived inflammation of the bowels. In such cases we must not be guided by the instinct of the animals themselves.

In some diseases of the digestive organs salt has proved beneficial. Thus, in cases of rot in the liver, accompanied by loss of appetite, paleness of the membrane, swellings under the throat, avoid ground which communicates the rot, and give the sheep five grains of iodine and half an ounce of the spirits of turpentine twice a day, and let them have free access to salt. And again, for the disease called "red water," a species of dropsy, give liberal supplies of food, a dry resting place and rocksalt.

Considered as a medicine, salt purges animals at the following doses :—

Horses.....	8 to 10 ounces.
●xen.....	10 to 16 "
Sheep.....	2 to 3 "
Pigs.....	2 to 3 "
Dogs.....	1 to 2 "

It becomes a poison at the following doses :—

Horses.....	2 lb.
Oxen.....	3 lb.
Sheep.....	6 to 8 ounces.
Pigs.....	4 to 6 "

Manufacture of Fire-clay Articles.

On page 217, Vol. VII (current series), SCIENTIFIC AMERICAN, we gave a very full description of the manufacture of fire bricks as conducted in this city, which has been generally read with much interest. A paper upon the subject of fire-clay articles was read by Joseph Cowen, jr., before the British Association of Science, giving an account of the fire-clay manufactures in the district of Newcastle. From this paper we condense some extracts of general interest. Silica and alumina are the two substances of which fire-clay is chiefly composed. It generally contains small portions of the oxide of iron, lime, and magnesia, but the best descriptions, capable of resisting the greatest degree of heat, contain about 83 per cent of silica, and about 20 of alumina. At present there are about 80,000,000 of fire-bricks made annually in the Newcastle district (43,000,000 of which are used in the neighborhood), 12,000 fire-clay retorts for gas works, and of glazed pipes from 3 to 15 inches in diameter, 175 miles in length. No less than 150,000 tons of coal are required to burn these articles in the kilns.

Articles intended for ornament, as well as goods designed for the most substantial works, have been alike constructed from fire-clay with success, and hence also its use as an article of commerce is daily increasing. Gas retorts made of fire-clay within the last twenty years, have gradually been adopted, and they are now generally in use in all

gas-works. The improvement in the manufacture of this class of fire-goods has been very considerable. Great difficulties were experienced at first in making retorts of fire-clay of the required dimensions, and free from cracks ; but as the trade extended these difficulties decreased, and the demand for the article increased. All large gas establishments have been enabled, by the use of clay retorts instead of iron ones, to considerably increase their profits. The use of clay retorts has, however, diminished the number of fire-bricks, tiles, and the various smaller kinds of fire-goods formerly consumed by the different gas companies in setting their iron retorts.

Fire-clay pipes are now often used for lining chimneys in dwelling-houses, hospitals, &c. The use of such pipes as safeguards against fire cannot be too highly recommended. Fire-clay is also largely used for making chimney-tops, baths, flower vases, and other ornamental articles. Many of the common and lowest-priced descriptions of fire-bricks are now used for ordinary building purposes, in the construction of dwelling-houses, warehouses, &c.

Fire-clay has, for some years past, also been used extensively in the manufacture of sanitary pipes, for which purpose it is well adapted. The smaller main sewers and branch drains in all new works are now made of glazed fire-clay or earthenware pipes. Clay pipes, although in their adaptation to drainage comparatively modern in their use, are yet of great antiquity, having been found in the ruins of Nineveh in a perfect state of preservation, where they appear to have been used for the conveyance of water to the various aqueducts in the city.

Fire-clay is found to be a more suitable material for the manufacture of sanitary tubes than either earthenware or stoneware. The greater amount of heat that is required to vitrify it makes the pipes better burnt ; while the thickness they are usually made increases their strength and durability, and at the same time enables them to resist the action of the chemical agents found in suspension in the liquid sewage.

At an early period of their manufacture, the old system of moulding these pipes in plaster molds was abandoned, and a more expeditious method of making them was adopted, by the introduction of suitable machinery, in some cases propelled by hydraulic, but more generally by steam power. The usual form of a steam-pipe press is a simple cylindrical box, which, being filled with properly-tempered clay, has a ram or plunger working in it, which, being set in motion by the direct action of steam, admitted to the steam-chest by the moving of a handle, presses the clay to the bottom of the cylinder, through dies of various sizes. The socket and the pipe being made simultaneously at one blow, and the pipe being cut with a wire, is carried off on boards to stiffen ; after which a slight dressing by hand makes it ready for the kiln, where it is burned. The rapidity with which these pipes are made is very great—five men or boys being able to turn out about a mile of them in a day, from 3 to 6 inches in diameter, of 2 or 3 feet lengths ; or a proportionate number of larger sizes. The highest bore these pipes have reached is 3 feet diameter, but these are very seldom used, being found more expensive than a brick drain of the same dimensions ; but 18 inches diameter pipes and under, are the sizes used most, generally for main and side drains. In addition to their cheapness, these pipes are found of almost universal adaptation, from their internal smoothness and cylindrical form. When properly laid and well-jointed, a fall of an inch in 1000 yards will enable the sewage to flow through them without stagnation or interruption. These pipes are all glazed externally and internally with a powerful salt glaze.

THE APPLE TRADE.—The apple trade of Western New York this year is very extensive. The Lyons Republican says :—"The price paid for fall fruit is about one dollar per barrel, the purchaser furnishing the barrel. Winter fruit will bring a higher price, probably. It is believed that more barrels of apples will be shipped from Wayne county this year than ever before, although the crop is considerably smaller than that of last year. West of the Genesee river, however, the yield is astonishingly large, and Monroe, Orleans, and Niagara counties are sending out thousands upon thousands of barrels of fruit."