THE FEEDING OF PIGS.

In Denmark, pigs are principally fed on milk, barley and roots Sometimes they give corn-meal, but this is not much approved of. In any case, maize should not be given during the month that precedes the killing. Long experience teaches that the use of maize produces a soft meat which, in the abattoirs, is ranked as fourth class.

On the contrary, barley or rye, mangels or potatoes with milk, produce a first class quality of meat. Potatoes are given boiled. It is admitted that four pounds of potatoes, as food, are equal to one pound of grain, or to six pounds of skimmed milk, or twelve pounds of whey. Oil cake alone forms a soft meat. Skimmed milk, or whey, without barley or rye, forms fourth class meat.

Here is the method of feeding followed by Mr. Holm. In summer, besides the milk and grain, he gives the cows and young pigs, clover, peas, vetches and oats, as green meat; in winter, he gives mangels. The styes in which the sows are kept are so arranged as to enable them to take all the exercise possible, and according to Mr. Holm's experience, this is essential in the raising of pigs. Otherwise, the young ones remain weak and die in great numbers. This farm expert raises pigs in winter as well as in summer, and the sows generally have five litters in two years.

According to a bulletin published by the "Experimental Farm" at Ottawa, the feeding of pigs, in order to be successful, demands the following conditions: 1st, suitable dry, warm housing, free from winds and from draughts; 2nd, three times daily as much healthy feed as they can eat without leaving any: if it is grain, it is preferable to have it ground fine; 3rd, full access to a mixture of salt and ashes, to sods of turf, or to earth.

THE FEEDING OF HORSES.

Everywhere, we found that they chaffed the fodder for horses, and that they are made to eat more straw than hay, even during the heavy work; in the latter case the allowance of hay is greater, and that of grain is also increased.

In summer, no horse, any more than the cows, is allowed to go free; it is tethered in pasture, and tied with a head-stall. In winter its food consists of ten to fifteen pounds of oats, barley or rye, (the oats are not ground, but the other kinds of grain are always crushed), a little hay and straw (two parts of straw to one of hay) (1) and eight or ten pounds of carrots.

This variety of food suits the animal and helps to keep it in a good state of health.

III.

MANURING AND 'MENDMENTS. (2)

MANURE.

The Danish farmers take particular care of the manure, and especially of the urine. The stable floors and those of the farmyard are made impermeable, either by cement or by a mixture of stone and cement, or else of clay. The cement is only used inside the stables. The manure is always piled beyond the eaves, in well made heaps in the middle of the barn yard; the liquid manure tank, which is always at hand, connects with the midden by means of a trench that carries off the liquid portion; the stable urine is also brought to the tank by means of a duct sunk in the pavement

In France, in Belgium, as in Denmark and all over Europe, great importance is attached to the tanks. When we visited the school at Trois-Croix, in France, the director, M. E Hérissant, kindly gave us a pamphlet containing a lecture that he delivered in 1888 to the farmers of Ile-et-Vilaine, on the subject of manure and commercial fertilizers.

After alluding to the agricultural crisis that the French farmers were experiencing and to the large falling off in the prices for farm products, he asks himself what remedy was to be applied, and replies thus:

"Since we cannot raise the selling prices of our products, the only remedy we have is to lower the cost of production.

"Is it possible to reduce expenses? Scarcely, without injuring production.

"Production must then be increased, if it can be done advantageously.

"How, then? By the use of sufficient manuring.

Farther on Mr. Hérissant speaks of the making of manure, on which subject he makes the following remarks:—

"In the cowshouses there must be an impermeable floor, slightly sloped from the front to the rear of the animals, a trench behind them with a sufficient fall to carry the urine out, with a urine tank quite stanch and free from the access of rain water, so that the latter may not uselessly increase the mass of material to be moved. Then, one or several *stances* with impermeable floors, and surrounded by trenches to carry off the liquid tank that runs from the manure pile, and to bring it to the pit just mentioned. These stances and their trenches should be sheltered from the rain water in the yard, so that the latter may not uselessly, or nearly so, augment the amount of liquid to be removed.

"Such are the means to be taken. I would add that the best stable or stance soil is composed of concrete, which is not very costly, and if hard to come by, can be replaced by an intimate mixture of clay and broken stones, well rammed.

"This system once adopted, the care to be given the manure is of small account;

"Take out the manure daily, spread it evenly on the stance, giving it a regular form, tramp it as much as possible, and then soak it with urine from the tank.

"A good way, when it is completed and is meant to remain for some time, is to cover it with a coat of four inches of clay.

"The manure must be taken out daily in order to economize the bedding, and more easily keep the animals clean.

"It is spread evenly on the stance, so that it may undergo a uniform fermentation.

It is tramped and soaked to moderate the fermentation and to prevent it from heating too much; for then it becomes fire-fanged, and this is the index, the proof, that it has lost a large part of its nitrogen.

"The soaking with urine has also for its object the increased value of the solid manure in all that the former possesses, and finally the earth placed on the surface weighs on the heap, presses it together, moderates consequently the fermentation, and, moreover, absorbs the fertilizing gases that, under the effect of the engendered heat are evaporated from the manure pile. This fact is so true that if you take off the earth and spread it on meadow land, it will produce results often equal to those from the manure itself."

Here is what M. Hérissant says elsewhere about the value of cattle urine:

"Wanting to find out, moreover, how much urine a cow produce in a year, it has been found that it may be gauged on the average of 10 litres (about 9 quarts) per day, say 3,650 kilos per year (9,000 lbs.); or applying the above prices, to the value of 70 francs, about $14.00. If, on account of badly arranged stables, the want of a urine tank, etc., you lose the half of it, it is at least thirty-five francs yearly, per cow, that is lost and doubly lost, for it would certainly have produced a double amount of crop"

This advice, given by M. Hérissant is as we saw, carried into practice in Denmark.

We should note that nowhere, not even on the agricultural school farms, is the manure covered, except at Glasnevin, near Dublin, where it is under a simple roof. At the Grignon school, there is no covering for the manure; it is piled up, as in Denmark, at a distance from the eaves, and connected by a trench with the tank. These sheds are generally considered too costly.

The tanks are generally made of brick, of cemented stone and, sometimes, of a mixture of stones and clay

The Danes use a cask on wheels drawn by a horse, to spread the urine; this cask has large taps, or else a simple wooden bung that can be taken out by hand Opposite this opening is a board so fixed that the liquid may spatter on all sides before reaching the ground, and thus water a larger surface.

The foreman at Grignon showed us a meadow that had been mown in the spring, and on a part of which liquid manure was spread immediately. At the time of our visit, the hay had reached a height of 15 to 20 inches in the watered part, whilst on the remainder of the meadow it was scarcely six inches. The effect of this fertilizer is immediate, and it cannot be denied that the farmer who lets the urine run to waste, for want of a tank to receive it, incurs a considerably loss.

Mr. Holm, of Kallondborg, who had built a large and most costly tank on his farm, told us that the cost of it was repaid in two years by the increase in crops.

The Danish farmer perfectly understands the necessity of producing as much fertilizing material on his farm as possible, and if he pays so much attention to dairying and the raising of pigs, it is not only on account of the direct revenue from these sources, but also because they afford him the means of securing large quantities of manure. The more animals there are, the more manure, and, consequently, the more abundant harvest.

In our Province there are some liquid manure tanks, round St. Hyacinthe, amongt other places. Mr. Isidore Benoît, a farmer of La Présentation, has one that we think it well to describe: Set in the middle of a covered shed, this pit measures ten feet in all directions; it is in mason work, like a well, growing smaller towards the surface and only leaving a space for a pump by means of which the manure pile is soaked, or else the cask—for the watering of the field—is filled. Thanks to this peculiar form, the liquid is filtered, which allows o its being distributed through smal holes in the troughs. The earth cas out in the digging is used to bank u the shed, so as to prevent the wate from the roof or elsewhere getting in

Monsieur Lorquet, of St. Hyacinthe, has made a pit lined with planks and coated with rammeddown clay on the outside.

COMPOSTS.

A great number of Danish farmers make composts; the same thing is done in France and Belgium.

To make these composts they principally use the cleanings of ditches, waste vegetable matter, &c. When it is necessary to improve land that is wanting in limy salts, a mixture of lime is added. Many farm-experts recommend the use of lime in all cases.

At the Grignon school the composts are not used till two years old. The first year, the urine is thrown over the mass, the second year it is turned three times. The mould into which these composts are finally converted is especially useful for meadows.

THE USE OF LIME.

If the Danes pay great attention to the fabrication of manure, they also attach much importance to the presence of lime in the soil.

On nearly every land agriculturally worked there are large excavations whence marl has been taken to use for 'mendments.

Mr. Le Cour attributes the large crops of Denmark to the great amount of manure produced by the cattle and also to the lime contained in the soil, which gives activity to and assimilates the fertilizing principles contained in the earth.

In order the better to demonstrate the advantage of the use of lime in our Province, we think it well to publish the important information given by Mr. Nagant, asst-editor of the *Journal d'agriculture.*

LIME.

Quebec, 11th October, 1894.

Messrs. G. A. Gigault and J. D. Leclair, Quebec.

GENTLEMEN,

You were good enough to ask my opinion upon the important part that lime plays in our agriculture, from the standpoint of crop production and of proper forage for the dairy business.

The subject is so important that it would require considerable elaboration in order to be properly treated; but, for brevity sake, I will content myself with the following remarks:

In every country where agriculture is in a flourishing state, the soil is rich in lime, whether it is naturally abundant, or, at regular intervals and in sufficient quantities, dressings of lime, chalk, or marl are given.

Now, it is generally admitted that the soil of the Province of Quebec is far from containing a large proportion of lime, and I dare say that nearly half the farm lands in the Province only hold a quantity that is altogether insufficient for the crop requirements.

On this subject of the function of lime in the soil, here is what Messrs. Muntz and Girard, the great French farm-experts, say in their treatise on "Fertilizers."

"Lime plays a twofold part in the soil, first, it imparts a fertilizing element that is necessary to vegetation, and, moreover, it has a preponderating influence upon the physical and

(1) Hay-chaff with less than twice its bulk of straw is apt to *bait* in the stomach.—ED.

(2) The word, *'mendments*, is used by English farmers to express dressings of lime, marl, pond-mud, composts, &c., exactly what the French word, *amendements*, means.—ED.