

granary, thrashing floor, implement room, &c. The advantage of this plan would be that under the same roof you would get double room, merely at the cost of the foundation; which, although it would be an expensive thing, would at the same time make the barn indestructible by rot or old age, which two evils seem to destroy all barns most rapidly. The same plan might be carried out with the pigs and sheep; a double storied house would contain the pigs below and the sheep above; the upper part might be approached by a sloping gangway, which sheep would readily learn to ascend. There would be a necessity however, in that case, for a very carefully laid floor, to prevent the drippings of the sheep falling on the hogs beneath. While writing this I was informed such buildings are in use among the Germans in the North, which is to my mind a great recommendation of their utility.

Of the style of building in the Old Country I need say but little, for, however desirable, it is not likely to be carried into effect as yet on a large scale. Hay barn, straw barn, threshing barn, all separate, with the accompanying steam engine, long rows of stables for tying up cattle, sheep sheds, cowhouses, pigstyes, &c., all of the most approved and substantial quality, are far beyond our reach, though, as the utility of them has been proved there, we may be sure the nearer we approach to them the better it will be for us. One great argument for keeping all stock under cover is the superior quality of the manure made in that way. That made in open yards, exposed to all the vicissitudes of the weather, now burnt with the sun, now drenched with rain, and now covered inches deep with snow, is washed out till it no more resembles the real stuff than some of the whiskey bought at small retail dealers resembles the pure spirit, and much of this must be applied to the land before any benefit can be derived from it. On the other hand, how superior in strength and quality is the manure made under cover, without a drop of extraneous wet touching it. In that case the straw is able to hold the liquid manure made, it not being saturated with rain and snow, and retains its full strength till required for the land. In this country there seems no danger of the manure becoming what is termed "firefanged," a result which occurs in the Old Country when it is kept too dry, and allowed to heat. The cold here seems to prevent its rising to a temperature sufficient to burn it, and consequently destroy its valuable qualities.

We will pause for a moment to see if we can ascertain the exact amount (as nearly as possible) of the manure wasted by its being made in the open air. If the straw be loaded with rain or snow, of course it is unable to absorb the liquid manure made by the animals, which runs off either at the time, or on the next shower of rain, bearing with it part of the strength of the solid manure as well; that, however, we will not take into consideration, but merely turn our attention to the amount of fertilizing properties running out of the dungheap from the liquid manure. The cow is supposed to void in the course of the year 13,000lbs. of urine, containing 900lbs. of solid substance, which is more fertilizing than even

the far famed guano, as it contains about 25 per cent. of ammonia, whilst guano contains only from 13 to 15 per cent. Now, supposing she spends four months in the yard, the amount that ought to be collected would be 300lbs., all of which is lost in open yards, as it dribbles out to the lower side of the barn, where the trampling of cattle and its too great strength prevents all grass from growing. Suppose, then, a man keeps four cows, two oxen, and half-a-dozen other animals of the kind, by no means a large stock, he wastes 3,600lbs.—32 cwt.—of the most valuable manure. Now, upon a careful collection and average of all experiments I can discover, 1 cwt. of guano will produce about three tons of turnips, nearly two tons of potatoes, about one ton of hay, eight or nine bushels of oats. On other crops I cannot discover a set of experiments to deduce an average from, but, as a general rule, I think one may state 3 cwt. of guano upon land otherwise well treated to be equal to 20 loads of farmyard dung, therefore the 32 cwt. of dried urine wasted are equal to 200 loads of dung, worth at least £10, not to mention the difference between hauling out one load of 32 cwt. and 200 loads of dung, which I anticipate would take a fortnight at least, and thereby add some £6 more to the chapter of expenses. Now, a shed to shelter that number of stock can be built for about £20, so that in two years or less the expense of erecting the shed would have been defrayed, and the shed itself would stand ready for a continuation of the system.

We will now, having comfortably (in imagination at least) housed our stock, and seen them protected from snow and rain, proceed to feed them in such a way as to derive the greatest possible benefit from the smallest quantity of food. This is a portion of the subject which most forcibly reminds me of my inability to do justice to it, but I will proceed to handle it, supported by the best authority I can produce. Our working cattle will, of course, be fed upon oat straw, with a handful of oats when they are at hard work, for though oat straw is a most valuable article of food, it requires some assistance to keep up the strength when much called upon; a few roots also, when they can be obtained, are of great service to them, as any one will see who takes the trouble to give them; but roots for working cattle in any quantity are hard to obtain as yet. We may, however, be fearless as to their well-doing if properly supplied with oats, and perhaps a little coarse hay, when at work.

The cows, when a good stock is required, demand the most of our attention and care, particularly as the time for calving approaches, when they have to be carefully fed beforehand, for fear of their getting too fat, and so endangering their lives whilst calving, and well fed afterwards, so as to produce the greatest attainable quantity of milk. It may seem absurd to be careful about over-feeding cows before calving, and with many I have seen I should think it impossible, but all who have bred good cattle will feel that I have said nothing but what is very necessary. Cows can be fed to great advantage upon hay and straw cut up in a chaff-cutter, and mixed together, as-