

will keep fat all winter long with one meal a day, and some slop occasionally at supper time for drink. Any hog that is not peevish enough in his nature to sleep two-thirds of his time in winter will never find an advocate for his life in me.

This arrangement of boxes or boarded up small rooms, as above described, some having large holes for the ingress and exit of the full-grown animals, and others having smaller holes, so as to effectually divide the sizes, answers well. Before we did this, we often found a small pig smothered amongst large ones; but since we have followed another course, we never have this happen. We find that by feeding with peas amongst the bedding, occasionally, in each division, the hogs naturally divide themselves according to their capabilities of passing through the hole provided, and thus it soon becomes habitual for the little ones to sleep alone, leaving the older and larger hogs outside their enclosures.

C.

### Steaming Food for Stock.

In answer to several enquiries on the cost and apparatus required for steaming food, I propose to describe a steaming house that I have often seen at work, before leaving England. In a former number of the journal there was a description of a similar establishment, but on a limited scale, probably too much so for some people to use efficiently. This enterprise was conducted on a farm in Hampshire, England, and was used most effectively for many years.

The building needs no description, as any building or shanty would, of course, answer as well.

The boiler was a large-sized potash kettle set in an arch, with a large space for fuel underneath. There are many opportunities of getting better ones here. The fuel used was what are called in England "Bax in faggots," that is, the large limbs of the trees mixed with some smaller brush, and all bound up with withis. This bundle was five feet long, and the fire hole would receive a stick without cutting. We always used to cram in a faggot whole.

The ash-pit was deep, and the flame ascended all round the kettle, and had to descend again about two feet at the back to the outlet that communicated with the chimney. This was a very great improvement, and saved an immense quantity of fuel. Until the steam was well up, and everything hot, the fire was allowed to escape into the chimney through an opening provided with a damper at the very upper part of the space, under the kettle. Afterwards, and when the fire and steam were well going, the damper was closed, and the flame forced to descend and escape into the lower outlet. This course kept the great mass of flame playing round the kettle, and none could get up the chimney without giving out its heat.

We tried steaming the food about one hundred feet away from the furnace, but found it more practicable to remove the steamer close to the boiler, and by arranging the steamer on handles or "tugs," placed about the centre of the weigh, to be moved, we could invert the whole quite easily, and empty out the contents into wheelbarrows or handbarrows, and so convey it away to the feeding cistern.

The good arrangement of the boiler or kettle was greatly assisted by a curb of two feet high, being hooped on to the chine, exactly similar to a barrel being hooped on to its head, the flange of the kettle forming an edge to be received into the course cut in the ends of the staves to fit it. The other end of the stave had a head firmly hooped up, and which was sufficiently thick (about 2½ inches) to bear a pressure of steam of about 1½ to 2 pounds to the square inch.

The safety valve was about four inches square, and consisted of a trap of wood covered with linen, so arranged with a hinge to the head as to lift readily if the pressure increased too much. The advantage gained by the curb was that the boiler held water enough to steam all day without the necessity of filling it up. A force pump was thereby dispensed with.

In steaming roots, there will necessarily be a large quantity of distilled water mixed with sap, that will accumulate in the bottom of the steamer. This was taken off from under the false bottom at intervals of twenty minutes, with a cock inserted in the bottom of the steamer, underneath the false bottom with which it must be provided.

The best steamer we could find, and the most easily handled, was a 150 gallon wine-cask, balanced as before described on pins or lugs at about the centre, so as to admit of its being inverted. We found it absolutely requisite to have a two-inch steam pipe communicating with the steamer from the boiler. We tried smaller, but they did not answer as well. Wooden pipes are best. There was a screw coupling to connect the steam pipe, so arranged as to be easily unfastened when the charge of roots was ready to turn out. From fifty to seventy minutes usually sufficed to steam the roots, which were cut into small pieces, and ten minutes was required to empty the steamer, and ten more to fill it; and the work went thus steadily on all day. The roots, being entirely for pig feed, were dumped into brick cisterns, and as each layer of roots, of say six inches in thickness, was filled in, about half a bushel of meal was scattered over it, and the heat of the boiling roots partly or altogether cooked it. When the cistern was full it always fermented, and as such it was believed to be much better for feeding hogs. I recollect perfectly that when at home we used just such a steaming apparatus as is here described, and many others also in our neigh-

bourhood did the same. The steamed roots did not, however, answer for pig feed well alone, especially mangel wurzel. The hogs scoured badly, and some meal was absolutely requisite to counteract this. Turnips were better in this respect. Potatoes were excellent, and all our hogs were invariably fattened on barley meal and potatoes. Peas were more expensive, and were considered to make rank pork in comparison.

Fattening cattle will not do as well on steamed roots for food as on raw, unless meal is mixed in, and the whole so arranged as to be quite fresh and warm every day. The case is altered with milking cows; any kind of slops will force their milk, and make excellent butter, if managed properly; but cows that are accustomed to be so forced will soon do little without it during winter. I am sure that if a large tub were so managed as to secure a succession of layers of alternate chopped straw and roots, which, after having been steamed, was kept heated and fed warm to cattle of any description (other than those which were being forced to fatten with great rapidity,) every farmer would keep nearly double the stock on the same food, and the manure would be very valuable.

Such an arrangement would not be a very expensive one, and the whole could be arranged and put up for about eighty dollars, exclusive of buildings, and would last half a lifetime.

There would certainly be a continuous labour attached to it, as the food must be prepared at least three times a week, and probably heated up each day in very cold weather; but the dairy stock alone would be so much improved by it, and the winter butter so increase, that it would more than fully pay all expenses; and when spring grass came, cattle so wintered, although probably not fat, would be in very thriving condition, and would become good beef by July, when beef always sells so well.

C.

### Oxen

In ancient times, when agriculture, yet in its infancy, was confined to the raising of grain exclusively, and when every farm in Great Britain had its run of pasture over neighbouring uninclosed wastes, ox labour was employed altogether; and indeed it is so yet over the greater part of Europe.

They were sufficient for the slow labour employed in an alternate course of grain and fallow, and where going to market was a matter of rare occurrence. They were maintained at little expense on the free pastures in summer, fed on straw through the winter, and when too old to work were consigned to the shambles. Indeed, it is doubtful whether the farms under the defective management of early days would have been able to support horse teams and also oxen for food. Old Fitzherbert in his Booke of