

of the best farmers in Scotland, notably two who were gold modallists of the great Highland Ag Soc. last year, sow, even now, eight bushels of oats to the imperial acre.

A. R. J. F.

Waste manures.

I have been asked to give instructions in full for the preparation of bones, butchers' refuse, tanners' refuse, and matters of a like sort, for manure. If people really read their journal, they would have seen that, more than once, I have given an entire description of the plan to be adopted; but I will repeat it once more:

For every bushel of ground bones take three bushels of earth. On a stone or earthen floor, make a layer of earth 3 inches thick on which place a layer of bones one inch thick, sprinkling earth and bones with water till both are thoroughly damp. Continue this until the heap, which should be flat-topped, is about 4 feet high, when it may be left alone for a fortnight, or until the heat becomes considerably raised—say 120° F. It should be turned over after the above lapse of time, sprinkled as before, and carefully shaped into its original form, and at the end of the second fortnight, the mass will be perfectly homogeneous and fit for use. Six bushels of bone dust treated in this way will have a much greater immediate effect than ten bushels unrotted.

Butchers' refuse: two of earth to one of refuse. The large intestines such be chopped in pieces, and the larger bones broken up with a sledge-hammer. If there are many bones, this kind will probably require two or more turnings, and it may take two or even three months before they are perfectly worked up.

Tanners' refuse varies so much in quality that it would be impossible to lay down absolutely strict rules for its manipulation; but, as a general thing, it will require three of earth to one of refuse, and two turnings with their concomitant sprinklings. Six weeks should finish it. These operations should be carried on under cover, and not on a wooden floor, unless it is desired to destroy the boards.

Poultry manure may be mixed with all or any of the above materials, without danger of losing the ammonia it contains. The earth and the sprinkling will retain and fix it.

Now, as to the way of using the preparations. Of the first, six bushels of bones with their eighteen bushels of earth, combined with half a coat of farm-yard manure, should be a sufficient dressing for any root, tobacco, or corn crop. Drill up the land, spread the dung, draw a light board over the drills to place a little earth on the manure, then spread the mixture of bones and earth as carefully and equally as possible over the whole, split the drills, and sow the seed.

I cannot tell, without inspection, how much of the other preparations will be necessary for an acre. But, with dung as before, five loads of tanners' and seven loads of butchers' refuse, including the earth of course in both, ought to be enough. They can be spread out of a cart with a broad shovel.

The fine state of disintegration in which the bones, &c. are found, when managed in the above fashion, enables the rootlets of plants to begin feeding upon them at once; a matter of more real utility in a manure than it is usually understood to be by practical men in this country; and, where the refuse can be obtained at a moderate price, the expense cannot be very great. In the tanners' waste there will be found a good deal of lime and ashes, but the spent bark should be carefully excluded (1). In the bones and butchers' refuse, the nitrogen will be found in the form of ammonia. In the tanners' refuse, is it not probable that it takes the form of nitrate of lime?

(1) It will not pay to buy.

These preparations are good for all kinds of crops, there is no danger in applying them as a top-dressing, and with the addition of a few bushels of ashes, they will be found to contain all that is necessary as plant-food for our usually cultivated crops—nitrogen, phosphoric acid, and potash. If the half dressing of dung is given, the ashes may be omitted, as farm-yard manure always contains a sufficient amount of potash.

If any tobacco-grower will try either of the above mixtures I am sure it will repay him for his time, trouble and expense. I have proved them all three, and they have always answered the intended purpose.

I wish to call the attention of all farmers to Mr. Goldstein's well written article on the curing and general management of the tobacco crop. It is very rare, indeed, to find one so deeply interested in a matter of business as the gentleman in question is so perfectly frank and open in his statements. If a new impetus, an impetus such as has never been felt before in Canada, shall not be found to have arisen this year in the general conduct of the agriculture of the province, it will not be for want of energy on the part of those who have so earnestly tried to advance the cultivation of the coming sorghum, sugar-beet, and tobacco crops. A. R. J. F.

The Art of Feeding.

To feed well is a most important part of the farmer's business. It not only includes the economical spending of the food, but the thrift of the animals to which the food is given as well. There may be thus a double saving or a double waste as the feeding is well or ill done. One cannot learn to feed by rote or by a set of rules, for animals, foods and circumstances all vary, and what may be well to be done in one case may be ill done in another. The principles on which the art of feeding is based are then a matter for careful study before the practice can be arranged. These depend upon the natural conditions of the digestive organs of an animal and upon the character of the food. The former are the most important to consider because from a thorough understanding of these one may choose such food as may be best, or may manage the food as to make it comply with the requisites of the animal. The intestinal or digestive canal begins with the mouth and ends with the lower intestines. Every portion of this has some important office to serve in the nutrition of the animal. The lips, the teeth, the tongue, the cheeks and other parts of the mouth which contain the salivary glands, the pharynx and gullet, the nerves, the stomach, the intestines proper; the liver, spleen and pancreas, all these organs have their distinct services to perform before the food can be prepared to enter the blood and convey nutriment to the system. Some of these organs possess more important functions than others, and these only will be considered at this time. The teeth reduce the food to a fine condition, aided by the lips, cheeks, and tongue, which turn the food and bring it under the grinding action of the teeth. The salivary glands then come into use, discharging their peculiar liquid copiously into the mouth to be mixed with the food which is ground into a semi-liquid paste. There are three principal salivary glands: viz: the parotid, the largest, which is placed near the angle of the jaw; the submaxillary, on the inside of the jaw near the angle; and the sublingual, which is under the tongue, is the smallest. The saliva secreted by these glands is really a digestive fluid, for it possesses the power of changing starch into sugar and rendering it more soluble. It is a complex fluid consisting of water with potash, soda, lime, an organic matter called ptyaline; sulpho-cyanide of potassium; chloride of soda, (salt); chloride of potassium; phosphates, and alkaline sulphates. It is limpid, colorless, and without smell or taste.