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Agriculture.

Smut in Wheat.

It is now a well understood thing that seed-wheat must be pickled in vitriol in order to destroy the vitality of the smut-germs. This smut is a fungus of the genus *Uredo* and the one infesting wheat is *Uredo caries*. The germs are present in the seed when sown, and they grow as the plant matures, rendering the flour made from a crop in which smut is present very offensive and often unfit for use.

A good pickle in which to soak seed wheat is made by dissolving a peck or coarse salt in 20 gallons of water and adding thereto one pound of blue vitriol, sulphate of copper. The seeds which float should be taken off and destroyed. It is scarcely necessary to impress upon farmers the necessity of pickling their seed, but the following from the pen of a noted Scottish Agriculturist is so conclusive as to the benefits of the process that we reproduce it:—"I have long been of opinion that ball-smut is a fungus propagated by adhering to the seed, and unless this fungus is destroyed before being sown, all the grains infected by it will be sure to produce diseased ears. Smut is of two kinds. In one of them the smut or black powder flies or wastes away before the sound wheat becomes ripe, while in the other the powder is enclosed in a skin frequently strong enough to remain unbroken when passing through the threshing machine. The larger number of balls, however, do get broken, the powder discoloring the sample giving it a disagreeable smell and a peculiar oily feeling. It is this variety which is destroyed by pickling. The other appears to be propagated in some other way; at least, as yet no remedy has been found for checking it. Many years ago I rubbed smut balls among clean wheat, then pickled part, and sowed both. The result was, the pickled seed produced a healthy crop, while of the unpickled portion there was hardly one sound ear. I have again and again seen the sowing of fields finished with unpickled seed tell to the spot where the dressed and undressed seed met. Old wheat should not be pickled, as its vitality will be sometimes totally destroyed by it, and the fungus itself seems incapable of growth when upwards of twelve months old. I am far from saying that ball invariably follows when undressed wheat is used for seed, as by a careful selection of seed this may be avoided for years. But the little trouble and expense saved by not pickling seed is trifling indeed in comparison to the security given. I have tried pickling barley for black-heads, where the powder blows off before the grain is ripe, but, as in wheat, without success. Still, I think it is worthy of further trial, as it has appeared to me for the last two or three years that many of the blackheads in both oats and barley are more nearly allied than formerly to the true ball in wheat. I should like to see experiments made by steeping grain different lengths of time in sea water, or in water salted to the strength of swimming an egg. This is said to be a remedy against mildew and rust in warm climates, and possibly it may prove equally efficacious in Scotland."

Cleaning Drains.

It frequently happens to land drains, says a German agricultural paper, that they get stopped up with accumulated earth, which makes them useless. How can it easily be taken away? In all systems of draining, pits should be made for testing the drains, in which the earth carried by the water can accumulate. When a drain has to be cleaned out, the augur is pushed down into the pit and left there. The flowing off will thus be hindered, and it happens that as long as there is a full flow of water, that

it will be dammed up until the pipes have filled them. These earthen pipes or wooden boxes are sunk a few inches below the level of the drain, as is shown in the picture. These are covered over so as to hinder anything that could stop up the drain, getting into it. The drain delivers into the box one side, and comes out on the opposite side. In order to remove the accumulated earth from these boxes or pits, it is necessary, as shown in fig. 1, to use a sand pump, as it may be called, an implement which, being

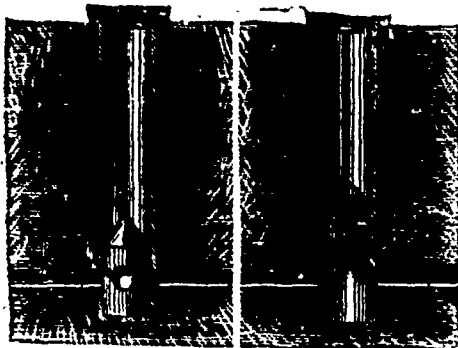


Fig. 1.—For Flushing Drains.

turned round, fills itself with sand or mud, and then is taken up. If such a quantity be accumulated as to cause a strong current, then the dam can be removed, a rapid flow follows in the drain, and by that the mud is washed away to the mouth of the pit. There are various ways of stopping the flow of water in drains for this purpose. With square wooden boxes wooden blocks can be used, as in fig. 1, and if the pits are round, a round block can be fixed in them, and it works like a tap, which can be opened or shut, as in fig. 2., or the dam can be lifted or sunk, as shown in fig. 1, thereby either stopping the current or letting it flow.

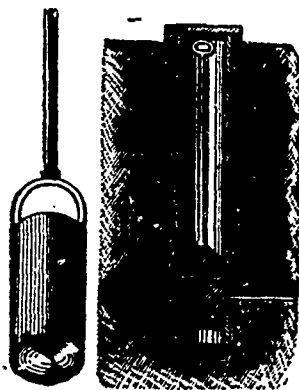


Fig. 2. Drain Cleaner.

Leaves from Farming Experience.—No. 12.

Dairy Farming.

If you churn too long, some cheese may be mixed with the butter and spoil it. When you stop the churn, put in some cold water to cool the butter. Take it out at once into a vessel for the purpose. If you wash it in water, see that the water is free of lime or it will spoil the butter. Most of the lime may be removed from water by boiling and cooling again. Then keep out the sediment. Some of the best butter makers use no water, only work the butter gently with the hand, cooling it in water and squeezing it with a fluted roller until all the milk is got out. Then take half an ounce of the purest salt, and mix it well with every pound of butter. Put it in a vessel so that it may drain. Cover with thick cotton cloth wetted and doubled, until next day. Let as little air to it as possible. Take it next day, and add another half or quarter ounce of salt and a quarter ounce of good sugar. Mix well, then prepare for market in prints, rolls, tubs or firkins.

For transport the firkins should be better made than they often are, of close-grained hardwood, that will not let the brine through the pores nor taste the butter. Firkins should be soaked with soft water and soda, to salt the wood and remove the acid of the wood. There is too much water left in the butter, and much of that water escapes either by evaporation or leakage. The butter shrinks, leaving an empty space between the butter and the vessel. Oxygen acts on the butter and it is spoiled. Some press their butter with dry linen cloth, and put sponge in a towel and press it, to remove as much water as they can. The atmosphere acts the same way on barrelled pork, and rusts it, and it is only fit for the soap-maker.

When the best salt cannot be got, the magnesia and lime may be taken out of common salt by grinding it with a bottle, and to about eighteen or twenty lbs. of salt add two quarts of boiling water. Stir it occasionally about an hour, strain and dry the salt for use. The salt left will be free from lime or magnesia and may be hung in a bag to dry for use, for butter or cheese.

The salting of butter causes it to shrink, and water is pressed out, which makes it advisable to have it salted twenty-four hours before being packed. Press as close in the tub as you can, and keep it from the air as much as you can, as the oxygen of the atmosphere is an agent by which the fatty matters of butter are liable to be brought into a state of decomposition. Therefore, it should be excluded as carefully as possible.

Growing Beef.

Another way of using farm produce is feeding for beef-cattle, mostly of your own raising, to be so'l when about two years old. When the right method is taken, with the right stock, a steer or heifer may be made to weigh from 1200 to 1400 pounds, at two years old, which will pay. An Ayrshire cow, about 1100 pounds weight, was fed with thirty pounds of hay and nine pounds crushed barley daily, and gave thirteen quarts imperial of milk and added three pounds daily to her weight.

Correction.

I have tried to show you the necessity of sufficient manures for success in working a farm. There is too little charged for rent. I charged \$900, whereas it should be \$1200—rent which will leave about \$700 yearly to the farmer for his remuneration, and loss of stock if any; only the outside of the farm will need fencing, and a little portable fencing for the young heifers.

Special Manures.

You will observe that I do not use so much of special manure as is recommended in books, but I use it every year in about such quantities as I calculate useful. Four bushels of lime will be nearly all removed in one year's clover. An average of crops will remove 116 lbs. Common salt supplies soda, potash, and the chlorides; plaster supplies sulphuric acid and lime. Superphosphate of lime supplies sulphuric acid, phosphoric acid and lime. Alum supplies potash; and alumina for sandy soils clay does not need it. Ammonia is useful for full crops; from 20 to 50 lbs. per acre, mixed with plaster 50 lbs. and 50 lbs. ammonia, with salt 100 lbs. and 50 lbs. superphosphate has added near 20 bushels of wheat of 62 lbs. per acre. Any person using one or two of these substances may receive no benefit, but use them all as directed for one rotation of 9 years, and you will be satisfied, but, until a field has got 18 loads of yard manure, each acre, it will need 3 times the amount of top-dressing that is directed to be applied after full manuring.

Conclusion.

I wrote these papers with the design of telling my grandsons how I brought my farm into such a good state of cultivation, and how they may make it better, and I have had many questions put to me such as, why are our crops not so abundant as formerly; what to do to restore