

There is still another way, as suggested at the outset, of counting cost, viz., in the daily routine of work, and also the equipment to do that work. I would like it to be understood that this paragraph is not given simply to show how we can make every step we take mean so much to us in dollars and cents, but rather as an incentive to greater efficiency in our farming operations; and to eliminate to some degree at least the drudgery that has always been associated with farm work. It is true that a large majority of farmers take for granted that the small cash balance they receive from year to year—and sometimes not even a balance to be seen—is all they should expect, it is almost equally true that they accept adverse conditions, unhandy methods, and a general lack of proficiency as inevitable barriers which block the way to more progressive methods. Under these impressions ambition dies, and as a result we have the drudgery—valuable time fooled away which might have been put to so much better use, had we just considered for a little what all these slipshod ways were costing us. What are they costing us? Let me say that the first and greatest thing they are costing us is our place in the community, in our country as progressive citizens. They are costing us our place at the front of the great army of men and women who are moving the world. But it costs us something more, and that within our own sphere of work. What about the steps we might save in a year, and yet accomplish just as much, if not more than before? This would mean more time for repairs, which would result in our taking greater pride and care in our farm equipment—not so many implements exposed to the elements from seeding to seeding or from harvest to harvest. In short I feel sure that a little calculation on these things would result in a desire, and not only a desire, but a will to have and to realize a better condition of things in general in and about our places.

Last of all let us consider the home or social side of this subject with all due consideration for business, making money, and other things which are indispensable in their places, yet I consider that the "home" holds a place superior to all these other things. The home is a nation builder—a character builder. The coming manhood and womanhood of the boys and girls of to-day is largely determined by home influence. In fact, in the mind of the writer there is no greater power for good or ill than the home. It is here that life is really lived and may be enjoyed to the full. In many instances the home is merely an eating house. Possibly in many cases nothing disagreeable is actually felt. But there is the lack of giving a thought to the home as a place above the sphere of business. It is in consideration of these things then that I would bring to bear upon this side of rural life the subject of this article, viz., "Counting the cost."

You who are out to make rich at all hazards, what is it costing you? Might I say it is costing you the respect and love of your home. You say this is absurd, for am I not making my money in order that my family may be sharers in the comforts it will some day bring? Perhaps so. But in the meantime what about the boys and girls growing up under your care, so soon to think and act for themselves? In a great majority of cases these young people leave their homes at the earliest opportunity, and so often miss the best in life, which might have been theirs.

Again, what is it costing you, you who can see no other use for your family than their capacity for manual labor indicates? Well, if you think it costs you nothing, what about the intellectual growth of the children? Is it not greatly hampered? Think of the opportunity to read and improve the mind that is lost just because of the ceaseless grind of work which must go on to the exclusion of everything else. Again, is it not true that tastes and habits are formed while the boys and girls are growing up? So if these finer qualities and tastes are not developed while they are young, in all likelihood they will not be developed later. Surely then under such conditions the farmer or whoever he may be, is paying dearly for his whistle.

On the other hand, what is it costing the man who is giving the home its proper place? It may be a little time, even valuable time. It may be a little of the hard-earned money, or it may be more than any of these. It may be that he realizes in those under his care, something more than just so many mouths to fill, and so many hands to work. He realizes that it is his duty to lead and direct them to the highest and best that life can offer. Is he rewarded in this? For answer cast your eyes around and behold the hundreds of good and worthy citizens, men and women who are a credit to any place, who are the standard bearers of honor, truth and integrity; and finding as you will that the great majority of these are the products of good homes, you will be compelled to say—it pays.

Huron Co., Ont.

COLIN CAMPBELL.

### Treating Grain for Smut.

Let me know how to treat seed oats or wheat for smut.

Russell Co., Ont.

S. L. H.

The question which our correspondent has asked is one of sufficient importance to warrant our giving it special attention. Smut diseases of grain cause a much bigger loss annually in Canada, and especially in Eastern Canada than most farmers believe. Some time ago the Department of Agriculture collected samples of fall wheat in Ontario and found that over 50% contained smut. Smut is also very common in spring crops, especially oats, but barley and spring wheat are also injured by this disease, and corn is sometimes badly affected.

Smut is a parasitic disease, and the spores adhere to the surface of grain and may be there at time of seeding. The life history of bunt or stinking smut of wheat and the loose smut of oats is very similar. In the stinking smut of wheat the parasite, during the summer, consists of jointed threads not unlike certain molds, and so fine as not to be visible to the naked eye. While the wheat is heading these threads grow up in the young plants and into the grains, which swell up and form the smut balls. These kernels, when broken open, liberate the smut spores, which, as previously stated, adhere to the grain, and may be present at time of sowing, thus carrying the disease from one year to another.

With the loose smut of oats the spores are scattered generally before the grain is ripe, though always a large number remain to be spread over the seed at threshing time. Spores adhering to the surface of the grain are the chief source of infection, although growing plants are of course subject to the infection from spores that have remained in the soil. The period of susceptibility of the plant is the very young seedling. Thus it is that the spores adhering to the seeds get such an excellent opportunity of gaining a foothold in the young plants. They are there just when the plant is most susceptible.

The only methods of treating these two smuts which should be used are the formalin treatment and the bluestone treatment. Bluestone is scarcely to be recommended on account of the injury to the grain, which is greater than with formalin. It is not a difficult matter to treat the seed. It may be immersed in a solution made by adding one pint or one pound of formalin to forty or forty-two gallons of water, leaving the grain in this for 20 minutes. Experimental work at the Ontario Agricultural College has proven that this treatment will completely rid the grain of live smut spores. It is necessary, however, no matter what treatment is used, that bags, bins, seed boxes, drills or whatever receptacle the seed is placed into after being treated be thoroughly disinfected with the solution, so that every possible chance of infection after treatment may be prevented.

It is not necessary to immerse the seed. Formalin of the strength of one pound to forty gallons of water may be used to sprinkle the seed. Be sure in this operation that every seed is thoroughly moistened with the solution. It is necessary to turn and return the seed while the sprinkling is being done, so that it may be thoroughly moistened. Pile the seed and cover with canvas or sacking. Seeds should be left in the pile closely covered for two hours, and then spread out well on the barn floor to air and dry. As soon as dry, sow. The sprinkling method is all right for seed from fields which have not been badly infected by smut.

For seed from smutted fields many consider immersing the better method of the two. In this case as soon as the seed is immersed many of the smut balls will come to the top. These may be skimmed off and the seed left in the solution for 20 minutes, then brought out and dried.

Some recommend immersing the seed for two hours and drying immediately it is taken out, or it may be immersed 15 minutes, then taken out and piled as in the sprinkling treatment and left two hours, then dried. The point is to get solution in contact with every smut spore, as some may escape in the groove in the grain if treatment is too rapid. The formalin treatment is undoubtedly the best treatment to use for stinking smut or bunt of wheat and loose smut of oats, and it is well to treat barley also, as it controls the covered smut of this crop. The sprinkling method, covering closely for two hours is simple. Either do this or immerse for 20 minutes.

In experimental work carried on at the Ontario Agricultural College over a period of five years there was, in the case of untreated oats, over 5% of smut, and while untreated oats gave an average yield of 60.3 bushels per acre the seed treated yielded 68.3 bushels per acre. An advance of 8 bushels per acre from treating seed, surely pays for time, trouble and the small amount of formalin necessary. It must also be remembered that smut spores do not lose their vitality through age of the grain. Old seed is just as likely to carry live spores as is new seed. It is important that the seed should be sown as

soon after treatment as possible. Of course, it must be dry enough to run well in the drill, and if it is still swollen from the soaking it is necessary to set the drill to sow a little more per acre to be sure that plenty of seed is put on.

For those who use bluestone the best treatment is to immerse the seed in a solution of 1 pound of bluestone in 25 gallons of water for a period of 12 hours. Spread the seed out and dry as quickly as possible, and sow as soon as dry. There is another bluestone treatment of 1 pound of bluestone to 10 gallons of water. This is used for sprinkling the seed, and it must be thoroughly moistened before good results can be expected. However, we do not favor bluestone, formalin does the work just as well, and is not so injurious to the seed.

There are some smuts as the loose smut of wheat and the loose smut of barley which cannot be successfully treated by these methods because they infect the embryo or germ of the seed and cannot be reached by local treatment. There is a hot water treatment for these, but it is rather complicated and dangerous, and unless the farmer is well equipped and prepared for all difficulties it is well not to try the treatment. It consists in soaking the seed in cold water for not less than 4 hours and not more than 5 hours, then immerse for a minute or two in hot water at a 120 degrees F.; and then for barley immerse for 13 minutes in water at a temperature of 126 degrees F.; for wheat immerse in water at a temperature of 129 degrees for 10 minutes. Be careful not to exceed these temperatures and time limits, or the germination of the seed may be ruined. A temperature below 124 degrees is not effective, and one above 129 degrees is decidedly injurious. This treatment is particularly useful for loose smut of wheat and barley, two smuts which cannot be treated by the bluestone or formalin as outlined, but any farmer who wishes to prevent most of the loss by smuts in his grain need not resort to this hot water treatment, but should make it a point to treat all his seed with the formalin treatment.

Be sure that the formalin purchased is up to strength. It should contain 40% formaldehyde gas. A simple test is to get an ounce of good formalin solution known to be exactly the right strength, and expose a sample of this to the air in a shallow vessel alongside a sample of the solution you have on hand; the solution of the proper strength will solidify in a day or so, if too weak it will not.

So far no satisfactory method has been found of treating seed corn for smut. Infection may take place in any growing part of the plant at any time during the growing season after the corn plant has become sufficiently advanced. The only method of fighting corn smut is to cut out the pustules and burn them before they become ripe. Never do as we have seen some practice in cutting the smut balls from the corn and throwing them on the manure heap. Burn them and be sure they are destroyed.

If, as indicated by experiments at the Ontario Agricultural College, the yields of grain can be greatly increased by a little care in cleaning the seed to prevent this disease, surely it is important that every farmer should practice treating seed grain for smut each year, and more particularly in a year when there is so much need for increased production. Very often we think our fields are not badly infested. A casual glance reveals little, but if the trouble is taken to go into the fields and search for smutted heads it will not take long to convince anyone that the loss is great wherever infected seed has been sown. The treatment is simple, formalin sprinkled on the grain or the seed immersed in it as outlined. It is worth while this spring on every farm in Canada. Remember that formalin is a 40 per cent. formaldehyde solution. When buying ask for formalin, not formaldehyde, and be sure it is up to strength but not too strong.

### Produce More.

Editor "The Farmer's Advocate":

The article by Mr. Horne just about sizes up the situation as to the real essential need of this province in farming. I myself have heretofore brought this matter to the attention of the press and it was ably discussed, but it rested at that. If we look for any of our leading legislators to take this matter up, I fear we shall look in vain. We must and should seek our own salvation. We are able to do it if we only go about it. We need a little organization. We as farmers must make a united request of our government, and I am sure the government will not turn us down. We must first come together and outline just what we propose, and clearly specify the remedy, state what machinery is required. The government is not going to spoon-feed us. We are men and ought to be looking out for ourselves. Moreover, we are the government. The cabinet ministers are our willing servants. I am sure we shall find it that way.

Then how shall we organize? I propose that a meeting be called of farmers who are interested in this matter and who see as I do with Mr.

Horne. and at our meeting. At our meeting, O. Dean, O. this prob suggest t as early

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