

the oats has lodged; and should it not lodge, the density of the crop will suffocate and destroy the grass. With fifty years' and more experience it is found that there is a better way. Ripened grain and fodder is more valuable than the half-grown and sun-wilted.

Sow oats as soon as you can; well-work the land; sow not more than one and one-half bushels to the acre; sow whatever grass-seed you choose with your oats; let it grow till it is ripe and you will find that none will lodge with very few exceptions. The reason is, the stalk having sufficient space is supported in an upright position. The cluster of oats on a single stalk can be counted by dozens. These if left to ripen, will produce thirty or sixty fold, if not a hundred. The fodder being a full grown and ripened straw, with many of the smallest grains left on, is as valuable for horses as first quality hay. The grain and the straw are each worth as much as the whole crop by the other method. Your grass, too, being sowed early and having the sunlight, as it will where the grain is sowed thin, will live and flourish. You will have no reason to complain of inferior seed, or summer droughts. Grass-seed on dry land should be sown early in the spring.

These few hints are based on actual experience of three score years.—*Cor. Germantown Telegraph.*

Broadcast Sowing, How to Do it Properly.

If the land is ploughed in beds from twenty to forty feet wide, no farther guide is required for sowing. Walk down the right hand water furrow, about three to four feet from the furrow; return on the other side up the bed in the same way, and thus a 20-foot bed is sown, the width of an ordinary cast being 10 feet. If the bed is 40 feet, walk down as directed above, return along the middle of the bed, leaving the ridge from three to four feet from where you walk; turn at the end and walk down the other side of the ridge, and return along the other water furrow. If the land is ploughed round, it is advisable to draw a light furrow every 10 feet, or poles may be used for guides, although the furrows are better, because the sower is not interrupted by having to replace the poles. Take a two or two and a half bushel bag, place in as much seed as can be carried without inconvenience; at the mouth of the bag have a tolerably long and strong string tied to the end of the seam; take hold of the other end of the seam, including a handful of the seed, and tie the string round this, leaving a space between the two ends of the bag of about six inches. Do not tie in a knot, but wind the string around twice and then make a half knot, shoving it close up; thus the string is easily untied and still perfectly serves the object. Now place the bag on the ground before you, crosswise; take hold with the left hand behind the corner where the grain is confined, and with the right hand just below where the string is attached to the mouth of the bag, raise it high enough to pass the six inches of string over your head, thus hanging the bag around your neck. Now close up the mouth of the bag with your right hand, pass your left arm under the bag, give it a sudden lift so the bag is laid in the hollow of your left arm; then by proper movement distribute the grain in the bag so that an equal proportion of the grain in the bag rests behind and in front of your left arm which supports the bag. Now open the mouth of the bag by taking hold of the edge of the bag with the left hand and let the grain run forward so that it can easily and without hindrance be grasped by the hand. After having placed yourself in position for sowing, you have to commence by taking half a handful to sprinkle at the end.

You are now ready to commence sowing. In grasping a handful of seed out of the bag, move your arm circular, keeping the elbow well off from the body. Remove your hand with the grain in, in the same manner, and throw your hand well back at your right hand side, twisting your wrist so as to present the closed palm of your hand to the front. As soon as your hand has reached as far back as to straighten your elbow joint, throw your arm forward and bend it gradually until it reaches the mouth of the bag. This movement must be quick and decisive. When you commence the forward movement of your arm, gradually open your hand containing the seed, so as to describe a half circle with the seed. Right here is where you have to pay the very closest attention, watching the seed so as to scatter it evenly over the whole surface. The easiest and least tiresome way to sow is to make a throw each time you place the left foot ahead, thus throwing every other step. Sowing thus, you will be ready to grasp a handful of seed out of the bag just when you place your right foot in front, and have your hand in position at the moment when your left foot is placed in front, making the second step. There is another mode of sowing two rows by throwing at every step alternately; twisting your body to the right and left as far as possible; but I do not see any advantage in this method, as with a single throw you can make a full round, while by the other practice you only reach one end in the same space of time. Some throw at every step, but this also I do not favor, as the seeds are very apt to be too thickly scattered. A well-practised broadcast sower need not measure his seed; it is regulated, as we may say, by itself.

Those seeds which require a less quantity to the acre are round, plump, and smooth. The sower cannot, without exerting himself, grasp more than the exact quantity re-

quired. Such seeds as oats, which require a double quantity, are smaller and rough, permitting the sower to grasp nearly twice as much as of wheat, rye or barley. But the sower has another regulator at his power. If he wants to seed heavy, grasp as big a handful as practicable and shorten the steps, and make the throw two feet narrower; if desired to sow thinner, make longer steps and throw a foot or two wider. When I was a farmer's apprentice, hand sowing was exclusively practiced, and to learn to sow was one of the principal achievements. It was also one of the main tests of a young man's ability in farming.

Buckwheat makes an exception from the above rules. In sowing buckwheat, grasp the seed in such a manner that the flat of your hand strikes the seed at the same time as your half-closed fingers. Thus only a little more than half a handful will be obtained. To sow grass seed is still a more difficult undertaking. I prefer doing it with the "Cahoon" seeder, a little handy instrument buckled round the waist. If it has to be done by hand, proceed as described above, substituting a tin pan for the bag, only grasp the seed with the fifth and fourth finger closed in the palm of the hand, and the third finger partly closed; thus for clean seed, such as clover, timothy, etc. Where the seeds amount to half a bushel or a whole bushel to the acre, only one or two fingers are closed.

Although the even distribution of the seeds is a difficult matter, especially of grass seeds, still it can be accomplished. The worst obstacle is the wind. In high winds no sowing should be done. But it cannot be always avoided to sow in some wind. Then the sower has to make his calculation and take his observations. If, for instance, the wind comes from the right hand side, he may be obliged to walk on the edge of the water furrow instead of three or four feet off, and, if the wind comes from his left hand side, he may have to walk six or eight feet from the water furrow. Has he head wind, he must throw his seeds very low to prevent them from being carried too far to the rear, and if he has the wind on his back, he must carefully observe not to scatter his seeds too wide on either side.—*Cor. Country Gentleman.*

Sources of Waste.

The sources of waste on the farm are far more numerous than one, at first sight, would suppose. The waste of time in the busy season of the year is one of the most important items, not the time devoted to lounging and idleness, for few thrifty farmers are guilty of that, but the time lost from the want of proper planning of work, the failure to accomplish the greatest amount of work with a given expenditure of time and strength. One man divides his farm into small lots, and if he should calculate the time he loses in turning about in ploughing, in mowing with the machine, or in raking, he would be astonished to find how much of life, and of physical energy he is wasting in this simple matter of turning about, how much more efficient his work would be, if it were planned on a different scale. Let us get rid of such a multitude of division fences and so save the land they occupy, and the waste of time they occasion, to say nothing of the fact that they harbor innumerable weeds and bushes, insects and injurious animals.

The waste of manure by neglecting to take proper care to apply proper absorbents, and to prevent wash and drainage, is something enormous every year. We lose about as much as we save, on the average, throughout New England, and we make it up in part by buying fertilizers at a high cost. Isn't it better to stop the leaks, to use more muck, more plaster about the barn, more loam in the pig-pen, and to collect more leaves for bedding for cattle? Isn't it better to save the ashes, to pick up and save the old bones about the place and to build the compost heap with a thousand things that are going to waste?

The waste in making and mending fences that are unnecessary, is very great. The fences and walls on farms in this State alone cost nearly twenty-five millions of dollars, and the average annual cost for repairs exceeds four millions. But this is not all. The loss of time caused by small lots, and the loss of land and crops, would make a still greater sum, a very large part of which might be avoided by the removal of division fences. We are not obliged to build fences to keep cattle out, but only to keep our own cattle in; and hence the expensive fences along the highway might, in many cases, be dispensed with.—*Massachusetts Ploughman.*

Chestnut Planting.

We observe in the *Country Gentleman*, in answer to an enquiry for directions for planting Chestnut orchards or groves, that the editor, in reply, commences by stating that the seed should always be planted where the trees are to remain, but does not give the reason therefor. Now, having had large experience with the Chestnut, we claim that the position taken by the aforesaid paper is at variance with the experience of our best growers, and that the failures which would ensue by planting the nuts directly where the trees are to remain, exposed to the depredations of animals, large and small, domestic and wild, for the

first year or two of their existence would be greater than if nursery-grown trees of reasonable size were planted.

We are aware that some varieties of trees transplant with greater difficulty than others. But we do not place the Chestnut, either American or Spanish, in the difficult class. We claim to have grown and transplanted more American Chestnut trees than any one firm in the United States. We have transplanted one-year seedlings, and all intermediate sizes, up to seven feet high, and never made a failure. Although we have, in some instances, planted very late in the spring, even after the trees were partly in leaf, our experience demonstrates that they will transplant as easily as any other nut-bearing tree, and possibly as any fruit tree on our soil, which, we must admit, is peculiarly adapted to the growing of Sweet Chestnut.

In soils not as congenial, it would be far more difficult to rear from the seed than to succeed by transplanting, as all know who have had experience in the rearing of seedlings, not of Chestnut only, but of most forest and fruit trees that the most precarious time is in the germination of the seed and carrying the young seedlings through the babyhood of their existence. As familiar examples we would cite evergreens, Larch and Mahaleb cherry seedlings, and, in our humble opinion, it would be just about as sensible for agricultural journals to recommend the planting of the seeds of these where the trees are to remain as to recommend such treatment for Chestnut. We have many times imported Spanish Chestnut trees from France and planted on our own grounds, and with a uniformly good success as we have experienced with other forest trees, or even quince and pear stocks.—*New York Times.*

Sub-Soil Draining.

Heavy, clay soils are the best in the world, if brought under proper cultivation. They retain moisture and fertility better than light, loamy or sandy soils, and have what we farmers term "substance" in them, to a much greater degree. The difficulty with clay sub-soil is, that undrained, it retains too much of the water that falls on it, rendering it cold, soggy, and unfit for the best results. Underdraining takes away the only objection to this kind of land. Without making it "leachy" like the light soils that are deficient in clay, sub-soil drainage makes it light, porous, mellow, and warm, early and easily worked, and multiplies its productiveness to a remarkable degree. A field in my possession, of ten acres, consisted of this kind of land—a close, heavy, tenacious clay. It was uneven, abounding in low spots—just low enough to prevent surface water from running off. These spots retained most of the water that fell on the field, until it passed off by evaporation. Hence, cultivation was always delayed, in spring, from one to two weeks, and when accomplished, did little good. The same tenacity which prevented early ploughing, existed throughout the season, and these spots never produced much, in consequence. Grain would be "scalded" out, and grass would not do well on them. In very favorable years, however, with an early spring and just enough rain during the season to suit such land, it would produce excellent crops. Every farmer who owns clayey sub-soil land of this nature, knows that I am writing the truth.

Well, I drained this field, in such a manner that every low spot in it was thoroughly tapped. It cost me considerable; I did not keep an account of it, as much of the work was done by myself and two sons, and at odd spells, when other work would allow. The drains were of stone, three feet deep, generally, and carefully laid. This was six years ago, and since that time it has yielded, at least, one-fourth better crops than before. I can plough it a week or two weeks earlier, an advantage which alone is sometimes worth the crop for that year, and the low spots formerly so unproductive, in wet seasons especially, are now the best parts of the field. It is more easily cultivated, breaks up easily, and is light and friable all the season. We complain about wet and dry seasons, but we are slow to avail ourselves of the remedies which both science and practice have demonstrated will render us comparatively independent of the seasons.

It is impossible to make these low, wet lands loose and mellow and porous, without drainage, and it is impossible to get good crops unless the land is loose and mellow. It is claimed that undrained land is best in dry seasons, but it is all a mistake. Land that needs draining will bake and pack hard in a drouth. Dig it up and it is dry as powder, while the drained soil of the same kind is moist and mellow. It admits the air and condenses the moisture in it, and brings up by capillary attraction, the moisture below.

It is strange that farmers cannot see this. I have a neighbor who stoutly maintains that drainage, except in swamps and where water stands on the surface, will not pay the expenses. Others admit all that is claimed, but never put in a foot of drain, notwithstanding. In this whole township I know of only two farms that have any underdrainage at all, and those two but very little. And yet it is all a tough, clay sub-soil, that never will produce half what it is capable of till it is thoroughly underdrained. I am putting in tile as fast as I can spare the means, and only wish I had commenced long before I did.—*Cor. Ohio Farmer.*