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THIS PAPER is on file in Philadelphia at the Newspaper Advertising Agency of Messrs. N. W. AYER & SON, our authorized agents.

SALEM'S bridge across the Willamette is progressing rapidly, and will without doubt be completed by December 1st.

The Oregon State Agricultural Society has not yet made its report of receipts and expenditures public. They are looked for with considerable interest.

THE FRUIT GROWERS of the Northwest country had a meeting in Portland, October 6. An interesting address by O. Dickinson, of Salem, upon the best varieties of trees to plant, was delivered. A committee was appointed to investigate the codling moth, and to secure the necessary legislation to suppress them. Fruit marketing was thoroughly discussed by numerous growers present. We shall have a full report in our next issue.

MANY REQUESTS for copies of this paper containing Mr. Clarke's articles on "Fruit Growing" are received. We cannot supply back numbers. All who are interested in this subject should subscribe at once. \$2 per year.

WE HAVE been promised a series of interesting articles on bees and how to feed them to keep them strong; during the winter, as also the necessity of giving the bees all attention necessary to live this winter, by Mr. Kauffman, of Needy, Oregon. The well known experience of the gentleman will insure the articles being a timely ones.

OCTOBER WORK.

October is the most delightful month in the year in Oregon, for the fruition of the year has then been accomplished and the farmer enjoys his sense of possession with full granary and ripened garden and orchard. And now there is work to be done of the most imperative need. If not already done he must put in his summer-fallow land, must plow and seed for winter wheat, must turn over land that he expects to sow in the spring, because two plowings are almost as good as a summer-fallow. Then there is hardly a farmer who has not grass-seed to sow, and October is the fall month for such work. In some localities, and with some varieties of grasses, it is advisable to sow in February, or as soon as winter breaks, but the best way is to sow grass-seed early in the fall if it will do to sow in the fall at all. However, that is a point which each must determine for himself.

We have lately shown, in regard to tree planting, that there is great advantage in setting out all trees in the fall, because they become firmly set and send out rootlets in the winter from four to six inches in length, that make the spring growth double what it can be if planted any time after January. We urge again that October is the month to plant orchards, and with ground in order you are sure to realize a good growth for your trees.

As to grass-seed, it is a pleasure to learn—as we do from seedsmen—that the sales of grass-seed are increasing largely every year. The value of grass as a crop is not a matter of conjecture, but of certainty. We continually hold up for consideration the importance of supplanting wheat crops with cultivated pastures, at least to some extent, because we see constant evidence that grass pays by actual returns from stock raised on it, and also brings the land into good condition. Cropping to grain exhausts, while pasturing with any kind of stock restores soil to life and vigor.

Last week we met, at the seed store of Miller Bros, Portland, Mr. Darling Smith, of Gaston, Washington county, who believes in stock and keeps good herds of thoroughbreds and grades. He has 150 acres in timothy, besides pasture land in orchard-grass. He does not have confidence in clover, because it is dangerous to let stock eat it too freely in a green state, and is liable to winter-kill on the bottom-land of Tualatin river. He cuts half, at least, of his meadow for seed, using a header, and then pastures it through the winter. He has had land in timothy for ten to

fifteen years without its ever being renewed in all that time. When we objected to pasturing meadow land in wet weather and quoted the fact that timothy has a bulb at the surface that is liable to be crushed by heavy stock, or eaten by swine or sheep, he explained that when heavy meadow was headed it left two tons of straw, or stubble, on the land, and this protected the roots from being injured; that he did not allow sheep or swine on the meadow, but kept cattle and horses there, and found that such pasturage kept his meadow in good condition, while the meadows of his neighbors deteriorated. At the same time it is evident that without the protection of the heavy stubble left by the header it would not be safe to run stock on wet meadow, and evidently Mr. Smith did not so treat the portion of meadow that he cut for hay.

Timothy does not afford much pasturage during the summer, as it makes no growth until fall rains come. It is probable that pasturing it when the soil is dry—after fall rains have started the new grass—may be an actual benefit, but as a general rule it is safe to say that wet meadows should not be pastured, and timothy should never have sheep or swine running on it. There is an advantage in clover, because it will make some growth all summer, and if not cut for a second crop of hay, or seed, will afford pasturage for swine and keep them growing.

Orchard-grass is Mr. Smith's favorite grass for pasturage, because it takes in so easily on upland. Of this we have proof in the fact that it is thick enough for hay and grows high and rank on the borders of our orchard, which is red hill land, and the borders were never plowed or even grubbed. Orchard-grass will keep stock fat and growing, but they will any time leave it for growing timothy if they can get at it. Timothy evidently has attractions for cattle and horses greater than almost any other grass, but that doesn't show that stock won't thrive well on other grasses.

We asked Mr. Smith, as a man of experience with stock and grasses, what he considered the best pasture-grass. He grows timothy and orchard-grass almost exclusively, because they suit his location. From what we have gathered by observation and the experience of others, we agree with him as to the value of those two grasses—orchard-grass and timothy—but we believe that wherever clover will do well farmers should sow it. Sown with timothy, the clover will ripen a week or so in advance of the timothy, but orchard-grass and clover ripen together and make excellent mixed hay.

On the island, so-called, scarce more than a stone's throw from our Salem home, across a slough, Mr. Minto grows clover and alfalfa in perfection. It is certain that on sandy river-bottom land both will reach perfection. He feeds his sheep on clover hay, and after years of so doing is satisfied with the results. Other grasses have attracted attention, but up to this time timothy, orchard-grass and clover are the most reliable. Blue-grass is good to mix with other seed. English rye-grass (perennial) is liked by some. What was known as mesquite grass (but really was velvet grass) proved to be tender and winter-killed, and stock did not always take well to it. Lincoln grass, as grown by Mr. Wm. Townsend, of the Red Hills, is a valuable grass with him, for it makes an early hay crop and grows rapidly, furnishing summer pasture. It is good for a fair crop of hay in June, and then grows until frost kills it down. It comes up again late in the spring, and in a month is fit to cut for hay. It bears trampling, wet or dry, and holds its own against everything but a hard frost, which only kills it down for the winter. Judging from Mr. Townsend's experience of several years, it is a valuable grass and deserves to be extensively propagated.

Anyone who can give us valuable experience concerning pasture-grasses will confer a public benefit. We have hay-grasses that cannot be excelled in our timothy, orchard-grass and clover, but the wealth of agriculture in Oregon would be vastly increased, if not doubled, could the stock-raiser decide upon grasses for pasture as valuable for that as the others named are for meadow.

To return to our text, this is October. In a few weeks winter will be upon us, and now is the time to do much important work. We know the value of some things, but do not seem to carry into practice that knowledge. Human nature is always "shutting the barn door after the horse is stolen." We are apt to be "a day after the fair." A beneficent providence gave us October to prepare for the winter and do much important work, so let us improve it and not look back on it and wish we had done so.

FRUIT GROWING.

NO. III.

October is the month when you should plant your trees, and you will ask yourself first of all: "How shall I plant them?" As the time has arrived when the ground should be put in order, we will leave the discussion of varieties, for the present, to consider what methods for planting trees is to be preferred; and here, let us say, is the most important fact with regard to orcharding, next to having the best varieties. Good varieties will not avail unless they are properly cared for.

If a man had the means to spend \$50 to \$100 an acre in preparing his land, it would be the truest economy to expend whatever is necessary to put the land in the best condition. A young friend in Portland, a professional man, too, has secured ten or twelve acres in the hills a few miles back of that city for his future home, and wishes to become a fruit grower. He asked us for information, described the lay of his land, and wants to know how to go to work. We looked at his vigorous youth and said: "The first thing you should do will be to put your ground in order, and we say, positively, never plant a tree until you do so." He looked disappointed; he is an enthusiast about fruit-growing, and said he would rather be a successful producer of what the world needed than hold the highest office in the land.

We cannot do better than repeat, for our readers, the advice we gave him. It was: "There will be an immense profit in favor of doing good work over doing poor work. Trees send their roots down to the sub-soil, and you must prepare that lower soil for their use. The way to do this is to thoroughly under-drain." He interrupted with, "Why, my ground is a hillside," and was astonished to learn that this did not make drainage the less but the more necessary, as the chances are that the best surface soil will wash away, unless the water from every rain-fall can escape by under-drains; but that is the fact.

We advised him to consult Mr. C. B. Brown, civil engineer, who makes a specialty of till-draining, and who last season drained a similar piece of land in the Portland hills for Capt. Lamson, Clerk of the U. S. District Court, with wonderful results. We commend any reader of the FARMER to Mr. C. B. Brown, Portland, who is reliable, and we think will give the best advice as to preparing the ground for tree-planting. A young man cannot afford to hurry such work. We have seen the need of it in our own orchard, where in different places trees die, six or eight together, and where in some parts they thrive much better than in others. We are satisfied that, with good under-drainage, the whole tract would be equally healthy for trees, and that we should now have hundreds of thrifty trees where vacancies have occurred. Not only so, but we fully believe that the whole orchard (considered very healthy and fine as it is) would be in much better condition and in much heavier bearing, and would have borne much earlier and much more, had a good system of under-draining been practiced in the beginning.

This year we—in common with the majority of fruit-growers—had a light crop, not a quarter of a crop, in fact, because the cold rains that came from the 5th to the 15th of May, for ten days, blighted the fruit. This resulted from the roots being flooded, causing sap-flow to diminish, so that the fruit was not supplied with food, and for the want of it, blighted, as if a cow should dry up its milk, and the calf die for want of it. The roots stood in cold water, probably, but suppose their land had been sub-drained to the depth of four feet, so that the surface water could sink to the drains and pass off, and the ground have remained warm and comparatively dry, then we could have realized \$2,000 more from the crop. This sum would have drained the land in the beginning, and it would have paid for itself over and over in the six years the trees have been bearing. We give this personal fact because we consider it to be the fact, and that it illustrates practically what we wish to show.

In places where trees die in bunches, six or eight together, it is generally because the sub-soil is dishing and holds water, so that the roots remain too wet in winter and too dry in summer. Draining will obviate that, as it breaks through the rim of the bowl and affords an outlet. In another place it may be that the soil is too thin, so that the sub-soil, or bed-rock, comes too near the surface. Here, also, sub-drainage comes to the rescue, for it lets the air into the sub-soil, and it works night and day,

summer and winter, disintegrating the bed-rock of marl, that constitutes the substance of the Red Hills of Oregon, and that crumbles to good soil on exposure. Letting air into it causes it to slack and it loosens and becomes soil, and the trees send down their roots into it and thrive. Without sub-drainage they could not thrive, even if they managed to live at all.

It is possible that trees grow well until a very dry season comes, when they show weakness. Here, too, sub-drainage is a saving power, for it makes the ground moist in summer and winter. Drainage for orchards is not so expensive as for gardening, as it is not necessary to put the drains so close. We expect, when able, to consult Mr. Brown about our own ground. We shall adopt his plan when financially able. We do not hesitate to advise those who wish to make orcharding a success, to at least get him to see the land and explain its needs. Near Salem the sub-soil of the Red Hills is a species of marl that soon becomes soil on exposure; other localities have clay hardpan; different localities have different conditions. It is the business of a farming engineer to know how each soil shall be treated, if he makes agricultural work his business. But supposing that you cannot afford to under-drain, and wish to plant orchards. You must make your plow do as much work as possible towards accomplishing what drainage does. Plow deep and fallow with a sub-soiler. Go down, down, down. If you can by any means scrape away another inch at the bottom of the furrows, do so. If you can possibly go down eighteen inches, do so. There is much to be accomplished by good and deep plowing and thorough pulverizing. When you have plowed and sub-soiled as deep as possible you can mark off your land by heavy double furrows. Run as deep as possible at the exact distance—say 16½ feet, or one rod—that you wish to plant your trees. The ground should be thoroughly harrowed at every plowing and turning of the soil; then run your dead-furrows accurately and plant your trees in them, and you will save much digging. Set the trees at least one inch higher than they grow in the nursery, and they will settle to the proper level. We have planted thousands of trees in this way and they stand, at ten years old, as well as possible and have always grown well. A good hand can plant 250 in a day. He should pulverize the soil under and around the roots and the tree will do admirably. We tried this way of planting on the very summit of a high and dry hill and it succeeded well. Apples and pears will no doubt be profitable in a few years, and as they need abundant room to grow in, we suggest the following as a good plan to try for a permanent orchard: Plant your trees—apples and pears—25 feet apart, and set peaches, apricots, plums and prunes between them, each way, 14 feet apart; then you will have 55 apple trees and 165 other varieties on an acre. As time passes your other trees, being comparatively short lived, will disappear, and your apples and pears, at 20 to 25 years old, will need all the room they occupy. Fourteen feet is room enough for your other trees, if you keep them cut back and don't let them spread out too much. In this way you will have a permanent orchard planted that will last for generations, containing the best varieties of winter apples and pears. You can seed it to clover grass and make it productive of grass as well as big apples.

A. Roberts—Clothing

About this time of the year the young men and boys, as well as their elders, provide good winter outfits and fix up for cold weather. At this time clothing dealers fill their drawers and shelves with new goods. We recognize that October has done its best and gives us the fruitage of the passing year. Mr. Andrew Roberts, on the corner of First and Alder streets, Portland, is the oldest and most respected of dealers in Oregon and keeps a supply that cannot be excelled. Mr. Roberts has everything a man needs to wear and he certainly takes the lead in trade at our metropolis, where he cuts and fits to order those who are particular, and fits from his stock in hand those who are not more nice than wise. He can put you in shape to brave rain and cold, and while you are at the Mechanics' Fair you will easily find where you can trade to the best advantage.

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What Baking Powder Shall We Use.

This plain question comes home to every housekeeper. We all desire pure and wholesome food, and this cannot be had with the use of impure or poisonous baking powder. There can be no longer a question that all the cheaper, lower grade of baking powders contain either alum, lime or phosphatic acid. As both as we may be to admit so much against what may have been some of our household gods, there can be no gainsaying the unanimous testimony of the official chemists. Indeed, analysts seem to find no baking powder entirely free from some one of these objectionable ingredients except the Royal, and that they report as chemically pure. We find some of the baking powders advertised as pure, to contain, under the tests of Profs. Chandler, Habirshaw and others, nearly twelve per cent. of lime, while others are made from alum with no cream of tartar. This, we presume accounts for their lack of leavening power as sometimes complained of by the cook, and for the bitter taste found in the biscuits so frequently complained of by ourselves.

But aside from the inferiority of the work done by these powders, the physiologists assure us that lime and alum taken into the system in such quantities as this are injurious. They are not decomposed by heat nor dissolved in mixing or baking. They go with the bread, therefore, into the stomach, where their physiological effects are indigestion, dyspepsia, or worse evils.

The question naturally arises, why do these cheap baking powder makers use these things? Alum is three cents a pound, lime still cheaper, while cream of tartar costs thirty-five or forty. The reasons for the chemical purity of the Royal Baking Powder were recently given in the New York Times in an interesting description of a new method for refining argols, or crude cream of tartar. It seems that it is only under this process that cream of tartar can be freed from the lime natural to it and rendered chemically pure; that the patents and plant for this cost the Royal Baking Powder Company about half a million dollars, and that they maintain exclusive control of the rights.

Prof. McMurtrie, late chief chemist of the Department of Agriculture at Washington, D. C., in the interests of commerce, made an examination of this process, and reported upon the results attained in the refined cream of tartar. The following extract from his report would seem to answer the question repeated at the head of this article, and which is so frequently propounded by the housekeeper:

"I have examined the cream of tartar used by the Royal Baking Powder Company in the manufacture of their baking powder, and find it to be perfectly pure, and free from lime in any form. The chemical tests to which I have submitted the Royal Baking Powder prove it perfectly healthful, and free from every deleterious substance."

One teaspoonful of extracted honey, one teaspoonful of vinegar (made also from honey), a teaspoonful of ground ginger and half a gallon of water. It can be used immediately, or will be good all day. I have never had a man or boy who did not prefer this to water. The condiments can be varied to suit the taste. The ginger is a good tonic, and the stomach is not likely to get "sick" as when water alone is drunk. They are not so liable to overload the stomach. When taken into the field for half a day water gets warm and sickish—not so this drink. It is good all day.—Eugene Secor, in Bee Gleanings.

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