

tion under barn. From this tank the water passes through 1-inch gas pipe into two tanks, 3 feet square, conveniently placed in basement of barn.

This water system is very satisfactory, except for outside tank at barn freezing, making it necessary to chop out ice occasionally.

Anyone wishing to build might improve on this plan, by having larger tanks, or having one large tank at well, and having smaller tanks placed convenient to stock in basement of barn, thus doing away with outside tank.

If the ground is level, and does not permit of a fall for the water to barn, the tank should be at least 12 inches thick, and the covering 8 inches, to prevent freezing.

As regards material and cost to build one tank similar to mine, it will require two loads of gravel, one load of brick or small stone, four barrels of cement, \$2 for iron to reinforce cover, and three days' labor.

Any farmer accustomed to using cement could put in this water system himself, and, if properly done, it will last for all time. Hoping you will consider this worthy of space in your paper, which is a real "Farmer's Advocate."

Kent Co., Ont.

THOS. SIMPSON.

Co-operation and Good Fellowship

Editor "The Farmer's Advocate":

"What is the matter with Ontario?" is asked again and again. There is nothing the matter with Ontario. Ontario is the finest Province in the Dominion, and he who as a farmer cannot make a success in Ontario cannot do so in any other Province. The matter is not with Ontario but with the people in Ontario.

That the rural population is not increasing is a fact. That this is a serious problem is true, growing more and more serious. Remedies are suggested, but how can a remedy be prescribed when the cause is not fully recognized?

The reason that the farmer does not enjoy the same luxuries as does the city man is because he is too independent. He is even more than merely that, but that is sufficient reason for his present situation. Surely all those of you who have visited large manufacturing establishments could not go home without admiring the vast economy of labor resulting from the perfect interworking with the rest of the workers. You cannot help but reflect how much less the same force of workers employed in that factory would accomplish if each man worked independently as farmers are doing. Think of the vast waste of labor and materials, etc., which results from performing separately innumerable tasks to which must be applied the co-operative plan. How possibly can men engaged in the same industry, instead of fraternizing as comrades and co-laborers to a common end regard each other as rivals and enemies?

We see the cause of Ontario's decreasing rural population. We also know the remedy—Co-operation and Fellowship. It is this fellowship that induces the lad to join the Boy Scouts, the young man to join a regiment. It is not merely the uniform.

Is it not pathetic to see the farmer who after he sees that which is going on around him, still persists in keeping his nose on the grind-stone? In spring we will see them putting in the seed. In eight-acre fields, with two-horse teams, he and his assistant, either his son, who should be at school, or it may be his wife, are sowing and cultivating, so are his neighbors. In that section of one mile square we will find later six binders cutting that grain, six teams are used and six men are thus engaged. Two binders and two men might do this work in the same time equally as well, but you see they are too independent. In the autumn, twelve plows, twelve teams and twelve men (chances are they are boys) will be seen turning the sod for those six farmers on that section. Six men with fewer horses would do the same work more quickly and better. Why do not these same six farmers join hands, club together, do as the city men would do, form a company, tear out those surplus fences, have fields of forty, fifty and sixty acres, use machinery accordingly, and do farming in a businesslike way? Why have scattered over the section in six plots corn, roots and potatoes, have one man with a small outfit tend to each of those patches, which one man with a team could do in the same time, when other work equally pressing could be attended to by the other five?

Let us take, for example, a section of 640 acres, divided into six farms. These farms are again subdivided into fields, averaging ten acres. A fence in these fields 4,480 rods of fence are needed. Each of these six farmers tries to outdo his neighbor in the buying of implements, with the result that enough cash is handed out to manufacturers to equip with modern implements and tools the finest 1,800-acre farm. In these fields you will find man and wife and every child who can walk working like slaves for a living.

Hired help is not available, boys and girls likewise are often crippled from hard work before they reach manhood and womanhood; no sooner do they reach the age of 21 than off they go, to the city or the West. Each of these farmers has huddled together in his stables his horses, cows, cattle, pigs and sheep and fowl. Many a day, even in the busiest season, you can see a rig leave the yards from each of those places, and were you to ask them what they were after they would probably each have the same errand, the getting home of a bag of meal or a pound of nails. So you see it takes five men, five half days, if town is some distance, to do a work which one might do were there a system. One of these men is an excellent horseman; he has the capabilities of breeding horses successfully. Horses are his hobby. His neighbor is a failure with horses; he prefers dairy cows to any other stock. His neighbors know him as a good dairyman. The third of those six happens to have as his hobby the raising of hogs, while his son who lives on the adjoining farm is not only a good judge of fat stock, but is a success in fattening cattle. There is no need of saying more. It is plain that if each of these men had six times the number of animals they are especially interested in the greater would be their interest and their success.

When we do look at this in the right light, is it not plain we are on the wrong track when we take as our motto "Every man for himself, etc.?"

Why the farmer mistrusts everybody else, even his own sons, is more than I can understand. Yet there are many sons who think it cannot be otherwise but own a farm all your own, with an entire outfit to work it. As long as this feeling exists, and as long as we insist to be blind, we cannot expect anything to remedy the present condition of affairs. Think what it would mean should farmers co-operate! The savings would be enormous. Children would not be crippling themselves with work. Farmers' wives would not be slaves as they now generally are. The help problem would be solved. No one would ask, What is the matter with Ontario?

Waterloo Co., Ont.

A. J. S.

Cultural Conditions for Seed Growing.

Address by J. H. Grisdale, Director of Experimental Farms, before the Canadian Seed-growers' Association.

The aims of the Seed-growers, stated briefly, should be:

1. To get large crops. Unless we can help increase grain crops, we have really no reason for continuing our existence as an Association. The improvement of quality is of importance, true, but the increasing of the returns is the primary consideration.

2. To improve quality. Along with the increased returns we want grain of good quality—uniformly plump grain. Both these features depend very largely upon the kind, condition and preparation of the seed-bed.

3. Uniformity in ripening date. After we do all we can to insure the large crop of plump grain, we must next consider how to secure uniformity in ripening of grain in different parts of the field. The field where only part ripens, we will say, on the 15th of August, another part on the 20th, and another part on the 25th, as happens not infrequently on many fields both in the East and the West, will give us such a quality of grain, such a kind of seed as is of comparatively small value either as seed or as feed. Therefore, uniformity of maturity is an important consideration, and one which is affected more or less by the preparation which we give the seed-bed.

4. Freedom from weeds. That goes without saying. One need not dwell upon that point. Any good farmer, any man who prides himself on being, or has any ambition to be, a producer of first-class seed, would not think of trying to grow such seed on fields where weeds are likely to grow in any notable quantities.

5. Uniform filling of heads. Heads where the seeds are of uniform or nearly uniform size from the top to the bottom, are the right sort for yield and weight.

6. Early maturity. Seed that will ripen up as quickly, or rather in as short a period of time as is at all commensurate with good returns, as is at all possible with a prospect of getting a good plump grain, is the kind of seed for Canada. It is, of course, possible to have it ripen too quickly, but, under such average conditions as obtain in Canada, we want good, early-ripening varieties.

Now, these being the aims of the seed-grower, the next thing is to consider how we can best get the land into such shape that it will give us crops of the character that would produce seed of the kind described. In the first place, we must have uniform land; that is, uniform as to drainage,

as to level, as far as possible, and as to the character of the soil. Of course, no man can control the character of the soil where he farms, but if he is growing a field of grain for high-class seed, if he wants to get the best returns in the way of quality and quantity, he must divide his fields in such a way that the soil on each will be fairly uniform in character, and that it shall receive fairly uniform treatment.

The first consideration would be drainage. In many parts of the country drainage is a question of minor consideration, but in Ontario, in all the Eastern Provinces, and in many parts of the West, drainage is receiving more and more consideration. We must, especially where we want to grow seed of uniform quality, so treat our fields as to insure a uniform moisture content in the soil. Getting the field into such shape as to insure such uniform moisture content in the soil is in many cases a difficult operation. I have in mind a field on the Experimental Farm at Ottawa where for many years we were troubled with just this difficulty of one part of the field ripening much earlier than the rest, and here is a plan that we tried on that field, which might be of some use to some of you who suffer from like conditions. We levelled the field, and the area where the trouble existed was about three acres. We spent about \$150 in taking off the top of some of the knolls and filling up some little hollows. It looked like a big piece of work. It was a line of work that the average farmer would probably think ridiculous. Now, I want to say that, for that \$150 expended on the field, affecting about three acres, we undoubtedly draw \$25 a year in increased crops. That is, in five or six years, we shall have increased our returns off that three acres sufficiently to pay the whole outlay. Further, not only has the increase been about what I say, but the quality of the grain has been very materially improved, and the quality of other crops, as well. In growing corn for ensilage, we have found a very much better return in quality, as well as in quantity.

DRAINAGE FIRST.

Everyone of us who has had anything to do with grain-growing in this country knows the absolute necessity for underdrainage under almost every condition one can think of in these Eastern Provinces, if we are to have the best success with seeding-down and grain-growing.

Different soils require different treatments. It is not only necessary to drain, it is not only necessary to level, it is not only necessary to so control the fields as to their arrangement that the grain will be of uniform quality, as affected by the soil, but we must also consider the particular field with which we are working. Some soils are so pervious as to allow moisture to slip away very readily, or to allow it to evaporate quickly if they are given unwise cultivation. Other soils are so close-grained, so impervious to moisture, that, if they are not handled in such a way as to permit of the surplus moisture sinking fairly rapidly, or if they are not underdrained in such a way as to permit of a fair amount escaping, then the results are injurious. So that we must, every one of us, consider the soil that we are handling, as well as the slope of the land and the underdrainage.

DEPTH OF CULTIVATION.

We find that, for clay soils, fairly deep cultivation is necessary. We must get the plow down a little deeper than where light soils are concerned. We must also, in preparing the seed-bed with the harrow, go a little deeper than might at first seem necessary, and thus insure the moisture as it falls being absorbed or taken in by the soil, and so held for the needs of the plant as the season progresses. But where the soil is light, as a sandy loam, or in some cases sand, then the firmer the subsoil the better, and the shallower the harrowing, the better results that may be anticipated. The study of the influence of different cultural operations on the moisture-retaining powers of different soils is an exceedingly important one, especially for farmers who are cultivating grain in districts where moisture is an important consideration. In the West, in Ontario, and in many parts of Quebec, while the precipitation of moisture in the course of the year is sufficient, the precipitation during the grain-growing season is very often quite inadequate, and, therefore, a study has to be made of this question to enable the farmer to so handle his land as to

INSURE AS MUCH MOISTURE

being held therein as will permit the crop making a uniform, rapid and certain growth right through the growing period, though the precipitation should not be uniform, or even if it should be quite inadequate. At Ottawa, we find that we get best results by having our grain come after a hood crop—a crop which, although it takes a great deal of moisture from the soil, acts as a partial summer-fallow, and leaves the soil very firm at the bottom, say, at a depth of four or five inches, and loose on top to such a depth as will permit of the seed sinking in. The roots