Soils and Crops

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Cultivation of Growing Crops.

The cultivation of crops requires reasonable care. There is seldom gain from deep cultivation after the crop has been planted. Such cultivation is necessary in preparing the soil for all hoed crops, but if not done then, later cultivation will not make up for the neglect. Summer cultivation should be shallow: sufficient to destroy weeds and produce a fine surface mulch one to two inches deep.

It may be possible and is then advisable to narrow the cultivator and cultivate deeply the space between the rows not occupied by growing roots. It should be remembered, however, that these roots penetrate the soil towards the centre of the row very rapidly and frequent observations are necessary to determine whether the feeding roots are being disturbed or destroyed by cultivation, as so very often happens. The moist soil below the loose surface soil covering is where soil bacteria are most active, and consequently where the most plant food is being liberated, as a result of which roots will be found in this soil area in greater abundance than anywhere else.

Although there seems to be no good reason for using care in selection of seed, preparation of the soil and fertilizing to grow a good plant—only to destroy the roots as soon as they have grown—yet this is what is very often done. Root pruning has so far never been shown to be desirable and, as the root development is a big factor in crop yields, the better chance they have for development without being disturbed the better use they can make of the plant food the soil contains. The object at this time is to point out the desirability of surface tillage by shallow surface cultivation and warn against deep culture in the area occupied by the growing plant.

Another reason why roots should not be disturbed more than possible is because injured roots may not be able to take up the full moisture required and wilting may result, bringing about premature maturity; particularly is this the case if the weather is hot and accompanied by drying winds.

A depth guide should be used on the cultivator to avoid too deep cultivation and as the plants grow toward the centre between the rows the cultivator should be narrowed. The advent of the horse hoe or hiller has marked the greatest advance in economic potato culture of any implement on the farm. This implement has made it possible to distribute around the potato hill a fine earth mulch sufficient to kill the weeds, if done when the weeds are young, and not in any way disturb the growing roots in the hill. The tooth cultivator should follow the horse hoe, setting it as close as possible, to loosen the hard centre between the rows in order to protect the land from drying out, form a loose soil to quickly absorb rains that may fall and give fine soil for subsequent hilling.

In potato culture the point above mentioned indicates the necessity for reasonable distance between the rows in order to grow this crop with the least amount of hand hoeing for, if the rows are narrow, there is not the space from which to draw the soil for hilling purposes and the row cannot be cultivated without doing damage to the feeding roots as there is not space enough for the cultivator to work without doing such damage. Thirty-three inches apart seems to be the distance most suitable. Tests made at Kentville covering a period of five years, including 16 tests, show that rows thirty inches apart yielded an average of 265.6 bushels and those thirty-six inches apart 293.1 bushels, the potatoes being spaced twelve inches apart in the row. The system of cultivation outlined above having been followed.

Care of the Chicks on Range.

The care of the chicks while in the brooder stage is most important, for at that time the largest mortality occurs, yet the subsequent care of the chicks that have lived through the brooder stage has very much to do with the success or failure of the birds later.

Plenty of heat—Do not cut down the heat too soon until the chicks are well feathered, and even after that if the weather is cold and changeable, they will require a certain amount of heat, whether they are raised naturally or artificially.

Naturally raised chicks—The hen will probably leave the chicks to themselves by the time they are feathered, sometimes even before, and it is well to have the chicks housed in a fairly comfortable coop or colony house, so that when the hen leaves them they will be quite comfortable and can get along without her.

Artificially raised chicks—The same care as to heat and comfortable rearing quarters should be given to the chicks that are hatched and reared artificially, and sometimes even more care is necessary. The removal of the heat, when nights are still cold, often results in the chicks becoming chilled, crowding into a corner and a number of them being smothered. Those that survive are more or less stunted because of the chill.

Give them fresh land—It is never advisable to rear chickens in the same yard or upon the same soil that the old hens have used. Give them new soil that is sweet and free from disease germs. Such a place as a cultivated orchard, potato patch, root or corn field, or in fact any place where there is a growing crop of such a nature that they cannot destroy it, will be an ideal spot for the chicks.

Plenty of shade—During the warmer months shade is very important. This can be provided by the growing crop, orchard, shrubs or even the raising of the house and in some cases, along with this, artificial shade made from boughs or cotton screens is an advantage.

Feeding—The feeding of a flock of chicks during the growing season should not be laborious. Though plenty of feed is required it may be given in such a way that the minimum amount of labor is entailed. For this purpose, hopper feeding is very much to be recommended. A home-made hopper in which mixed grains and mash can be placed and to which the chicks can have access at all times insures plenty of feed for the chicks with very little labor on the part of the attendant. If the chicks are late and it is necessary to hurry them in order to get their growth in plenty of time for the fall, a moist mash fed once a day will help them, and milk before them at all times is a decided advantage.

In feeding and caring for the growing chicks it should be borne in mind that the chief aim is to have matured pullets so that they will commence to lay before the winter season comes on. The feeder should keep this in mind and feed the birds accordingly. Early chicks may be fed so that they will mature too early for best all-round production, and though this is an exception, still it is well to keep in mind that the pullet that starts laying the latter part of October or the first of November is usually the pullet that gives the best yearly production and certainly yields a better revenue than the pullet that does not start laying until after the season of high prices for eggs is over.

This Might Help You in Your Painting.

Much of our paint now comes ready-mixed—that is, the pigment is ground in oil and tempered with oil and turpentine and drier. While this paint is supposed to be ready for application, I find that after it has been in stock for some time the heavier ingredients settle to the bottom. A casual stirring is not enough to insure a uniform fluid for application.

The quickest and best method of mixing such paint is to pour off nearly all of the top liquid. Now stir thoroughly, with a medium paddle, the remaining liquid into the heavier pigment, stirring so that the motion is from the bottom of the container. Gradually add small quantities of the liquid poured off, stirring in each addition thoroughly before adding more. The paint will work much better. From time to time the paint should be stirred so that it will not settle again.

For old unpainted wood or for new wood, never apply thick paint. Always use a paint well thinned with raw linseed oil and turpentine in the proportion of about five to one. The wood absorbs much of the oil, and if the paint is thick too much pigment will be left on the surface, leaving a chalky or dry appearance.

For home-mixed paints, pigments ground in oil should be used as far as possible, as they will mix far easier and better than is possible with dry pigments. In mixing such paint, start with the pigment, adding the oil slowly as in remixing ready-mixed paints. This method will consume much less time and will give a better paint for the trouble.

White lead ground in oil requires the addition of about seven or eight gallons of linseed oil and one gallon of turpentine for priming coat, while for finishing coats four to five gallons of oil and one quart of turpentine make a satisfactory mix for brush application.

The pigments used in painting are either mineral or metallic. The principal metallic pigments are lead, zinc, and iron compounds. The lead and zinc are used chiefly as the base of white and lighter tinted paints. The iron gives reds and browns. Mineral tints are colored earths mainly, and furnish a large variety of colors and tints.

To Scald Milk.

To prevent milk from sticking to the bottom of the kettle or the pan when you scald it, first boil a little water in the pan for a minute or two and then pour it out just before you put the milk into it.

Hand spinning-wheels are still made in London for export to the Far East.

Public prosperity is like a tree: agriculture is its roots; industry and commerce are its branches and leaves. If the root suffers, the leaves fall, the branches break, and the tree dies. —Chinese Philosophy.

Poultry

The use of dry mash is becoming more generally used to develop rapid growth in chicks. The mash may seem costly but the amount of dry scratch grain can be greatly reduced. Some of the commercial growing mashes are very desirable in promoting quick-growing broilers. Of course, the cheapest rations are produced at home, but if home feeds are lacking the poultryman can often use a few sacks of commercial mash to great advantage in growing a large per cent. of the chicks into vigorous birds.

Hens that are laying eggs for hatching should not be forced for a large number of eggs. It is better to have a few less eggs and have them strongly fertile and able to produce many vigorous chicks. When hens have been heavily fed to obtain many hatching eggs the owners have often defeated their own purpose. They have fewer good hatching eggs than as if nature had not been overworked.

Exercise is a factor in keeping the breeding birds healthy. That is why free range flocks often show a higher per cent. of fertility than special breeding pens confined on a limited area. When the birds are confined it is necessary to make them scratch for their grain in the summer as well as winter. A vigorous hen with a large range will do a lot of traveling in a day and a lot of scratching. She produces a profit with the least worry.

The lazy, poor producers are apt to be last off the roost in the morning and first to bed at night. Possibly considerable culling could be done by opening the hen house in the morning and closing it two minutes later. Then sell all that remain in the house that do not show interest in the nests. About two hours before sunset watch for the lazy hens that roost early. After some of them have gone to roost, cull them out and save the good hens that are still outside working. The above method is not a scientific way of culling hens, but we honestly believe that a lot of slackers could be quickly marked by that method.

Things Learned About Spraying.

At one time the writer assisted with experimental work in spraying fruit orchards and worked with men who had made a business of spraying carefully to obtain accurate results. We found that it paid to clean up the spray tank, engine and hose after each application. The nozzles and rods were thoroughly flushed out. Spray chemicals are so strong that many outfits are injured by improper care after use. A good hose will also be reduced in life if it is not cleaned after use.

We found that the nozzles of simple construction were best. They did not clog frequently and the material was easily dislodged if they did clog. We found that the angle nozzles were better than straight nozzles. With the angle nozzle it was possible to change the direction of the spray dope with a slight turn of the wrist. These angle nozzles enabled us to get in under the trees and place the rod high up in the branches where with a slight turn the spray could be sent out in all directions.

The new variable spray rod is a big improvement over the old disc nozzle, as it makes it easy to spray trees of most any size from the ground. The only danger is that one is likely to become careless and use the coarse, strong spray on nearby parts of the tree and thus cause spray injury.

Experiments proved that it was not necessary to saturate trees with the mixture to obtain good results. We did not leave the tree dripping but placed on just enough to cover every bit of bark or foliage with a film of spraying material. This made it necessary to keep the spray rod always on the move. The careless rodman is apt to spray too much on one place and then skip other places. This leaves part of the tree without protection while other sections are drenched. It is good business to keep the rod moving all the time when spraying.

We found that a long line of hose made it easier for the rodman working on the ground. Then he was not covered with spray dope by the man working in the tower. And he was not jerked forward by the moving of the team before completing his work. We found that a tank filler saved time in making up the mixture and that suitable clothes for the work saved time in putting it on the tree. A pair of goggles often proved useful in keeping the spray mixture out of the eyes on windy days. A substantial pair of gauntlet gloves were needed to keep the hands and wrists dry.

Comforts on the Rented Farm

Last summer it was my good fortune to visit a college friend who had lived on a farm all her life, had taken a college course in home economics, married a man who had graduated from the college of agriculture and gone to live on a rented farm. Knowing the good modern house in which she had lived on her father's farm, I wondered how she would enjoy a rented farm. She had two children and the usual number of hands to board with the usual lack of help in the house. I asked her how she managed to keep house so well and have so much time for reading and enjoying her children. She answered, "Do you know, I believe the reason more women are not able to make their work easier is because they do not study it enough?"

I asked her how she had gone about improving the place in which she had to work.

"The first thing I did," she answered, "was to work as best I could with the things I had and arranged just as they were when I moved in. The next thing I did was to sit down and think."

While thinking, she made a list of such improvements as seemed urgent. "We are poor folk, you know," she said, "and we had to make the money go as far as it would. So I made my plans carefully in order not to have to spend an undue amount."

The first thing changed was the sink in the kitchen. It was in a corner and the men using it had to cross the working space which she was using in preparing her meals. At least three times a day her husband and his helpers interfered more or less with preparation of meals. The sink was too low and made her back ache. She had it moved and raised and then had what she called, "the food end of the kitchen and the washroom end." The towels hung in a hallway near the sink and thus automatically moved the men out of the kitchen a little faster than they might have moved.

A high cabinet and a flat-topped one next were purchased. The latter was on casters which made it easy to move about the kitchen.

Equipping the Kitchen.

I was interested to see her various pieces of inexpensive equipment to save work. She also had a fireless cooker, a dish-drainer and a high stool. I asked her if she had ever bought equipment that she did not find useful and at this point her husband had great fun telling me of one dish-drainer that emphatically did not do what had been claimed for it so she bought another. That was the only piece of equipment she had purchased which was not satisfactory, but she had thought very carefully and informed herself well about each article before purchasing it. Although this was a tenant house, I have never seen a more convenient kitchen considering the fact that running water was not available.

This bright-minded mother carried her baby in a large market-basket enameled on the outside, lined and softly padded. The baby slept most of the time in this basket which was set on a bench something like a piano bench, only lower, close beside the bed in which the mother slept. For the three-year-old boy she had a bed which swung over the foot of her bed, high enough not to interfere with ventilation and covered by a very coarsely meshed net or hood to prevent his climbing or falling out. These contrivances can be purchased at furniture stores. These beds saved getting out of bed to attend to the children's minor wants. She said that the baby basket was one of the most convenient things she had ever had. She would put the baby in it, set it on the floor of the automobile and he could sleep on the eight-mile ride to town. She carried the basket into stores with her, which was easier than carrying the baby, and more comfortable for him.

She showed me the washing machine and churn which the man of the house had "rigged up" so they could be run by the gasoline engine. As they were not intended to be so used, the width of the wheels had been increased by a wooden piece in order to make them wide enough to carry a belt. By using his knowledge of mechanics, her husband had connected these two important pieces of equipment with the gasoline engine.

A Home-Made Refrigerator.

The problem of keeping perishable food in summer was great until this ingenious woman worked out this device: For a wedding present somebody had given them a bread-box much too large for their family use. They put a wooden frame around this non-rustable metal box and hung it in the well. Her husband constructed a frame with a pulley over the well. A pail filled with stones was fastened to the end of the rope which almost balanced the weight in the box and made it possible to raise the box with little effort. When she took food out of the box she put a stone in to make the box sink into the well. There was a shelf in the box so she could keep considerable food in this cool place. A heavy snap had been attached to the wires running cross-wise under the box and I asked her what that was for and she said they hung the cream can to that when they wished to put it in the well. It sounds clumsy but it saved lots of food and helped appetites as well as pocket books.

They had only the old-fashioned outdoor toilet but behind the door was a small barrel of lime and hanging near an aluminum cup with a handle. In my two days' visit I saw only one fly in the toilet, which proved, since it was in the hot summer time, that this mother was successfully protecting her family from the danger of fly-borne disease.

There were many other evidences of her careful study to do her housekeeping as intelligently as possible and to put into practice her knowledge of the laws of sanitation and health. By reading, she keeps herself informed and she says it makes her home-making much more interesting and genuinely successful to be trying to improve it all the time instead of just buying things which other people have.

After all, this matter of comforts, conveniences and home-improvements is the problem for each individual or group most immediately concerned. We cannot say it is the man's job or the woman's. Team work, of course, is ideal and family team work the very highest ideal of all. Community movements are drawing rural homes closer together and the spirit of community advancement runs now, like grass fire, swiftly from point to point. —D. H.

THE SUNDAY SCHOOL

JUNE 5.

Making the Nation Christian, Psa. 33: 12; Prov. 14: 34; Rom. 13: 1-10. Golden Text—Prov. 14: 34.

Connecting Links—The citizen who regards his duties of citizenship in the light of the teaching and example of Jesus will find a solution of many difficult problems. He cannot be a mere partisan. He will not be a blind follower of ambitious and self-seeking leaders. He will not be governed by selfish or sectional, or class interests or hatreds. He will endeavor, with dispassionate mind, to discover, in the light of all the facts, what is best for the people and the nation, and he will give his loyal and conscientious support to that which is best. If he differs from others, he will do so intelligently and conscientiously, and he will not hesitate to break with party, or with leader, if he believes them to be wrong.

Psalm 33: 12. **Blessed is the nation.** The most important duty of the nation, as of the individual, is to seek God. The nation's true wealth is in finding and knowing God, just as that is the true wealth of the individual man. Our statesmen should recognize this, our judges and our magistrates. The poet of ancient Israel held Israel's chief possession to be Jehovah. So, in Psalm 16, he says:—

"I have said unto Jehovah, Thou art my Lord: I have no good beyond thee."

"Jehovah is the portion of mine inheritance."

In Psalm 18: "I love thee, O Lord my strength."

In Psalm 23: "The Lord is my shepherd."

In Psalm 27: "The Lord is my light and my salvation."

The nation is indeed blessed which finds in the God revealed in Jesus Christ its wealth, its strength, its guidance, and its safety.

Prov. 14: 34. **Righteousness exalteth a nation.** So said the ancient law of Israel: "That which is altogether just shalt thou follow that thou mayest live, and inherit the land which the Lord thy God giveth thee." This was also the teaching of the prophets, as, for example, in Isa. 1: 16-17; Jerem. 7: 5-7; Amos. 5: 24; Micah 7: 6-8; Zech. 8: 16-17. And this same national ideal of character is found again and again in the Psalms. See Psalm 15, 18: 20-26; 37: 5-6, 28-31, and many other passages.

Rom. 13: 1-10. **The higher powers.** Paul has the vision and the outlook of a Christian statesman. His ambition is to make the law of Christ the law of nations. But he knows that in his time Christ's law of love has not yet taken possession of all men. It has not even in our time. One may dream of a social order in which every man will of his own accord, and of his own will, do what is right, but that is an ideal still far from being realized. For its own safety and well-being every society must have its rulers. The primitive social unit, the family, has as its rulers the father and the mother, and the group of families which constitute the clan or tribe has its council of elders, and its head of the council who becomes chief or king. Such powers or authorities arise out of the very nature of things. The authorities elected by popular vote in a democracy are their legitimate successors, for they are the chosen representatives of the individuals and families which make up the state. No doubt, in a large and complex society, such a method of election should be sought as will ensure the fairest and widest representation of all classes, interests, and ideas, but the governing body so chosen should have the loyal support of all good citizens—a support, however, which will not exclude fair and reasonable and friendly criticism.

The higher powers of St. Paul's time were those of the Roman Empire, which in many cases had established itself by conquest and ruled without the consent of the governed people. Yet, for the most part, its rule was just. The Roman arms cleared sea and land of pirates and robbers, established and preserved peace, and made travel and commerce both possible and safe. Many people were much better off under Roman rule than they would have been if independent. The Empire provided, at least, an educative discipline, as the British Empire has done in many lands, through which subject peoples were prepared for self-government.

Paul lays down the general principle that such higher powers are of God and should be obeyed. No doubt he would not have counselled obedience to anything morally wrong, nor would he have denied the right of subject people to revolt against a tyrannical or unjust government; such revolts would be merely a transfer of allegiance to rightful authorities chosen by the people. But where the powers are established and recognized they should be obeyed. The good citizen will keep the laws of his country.

The ruler thus becomes a minister of God, to whom obedience is rendered, not by reason of fear or force, but for conscience sake.

Pay ye tribute. The injunction, in terms of to-day, would be, "Pay ye taxes." Even though they bear heavily at times, and we desire economy in administration, they are necessary for the conduct of the affairs of the nation.

Owe no many anything but to love one another. This is a great precept, a finely-conceived ideal and law of citizenship. Paul's injunction is to give tax or tribute, fear or reverence, and honor, where they are due, and love to all, and thus to discharge our debt to all.

Love worketh no ill. Love works all manner of good. Love is the one great Christian law.

Application.

The Jews were intensely patriotic and felt very keenly their sad political state. They recalled the glory of former days and writhed under foreign dominion. As a result of this, rebellions were constantly breaking out, and the Jews hoped thus to attain political freedom. The message of Jesus to these men was that the real slavery was the slavery of sin. This underlying moral condition was responsible for their political servitude. To these men, hot with resentment against Roman rule, Jesus said: "Everyone that committeth sin is the bondservant of sin." Thus Jesus showed that the real bondage is when the soul is under the dominion of evil passion.

Filtered Rain Water at Country Schools.

There are countless district schools where no provision is made for drinking water, save as it is carried by the children to the schoolhouse from some farm-home. Undoubtedly the cost of drilling a well is responsible in most instances for this condition.

The trustees of one rural school have solved this problem in a safe and comparatively inexpensive manner by using the rain which falls upon the roof of the schoolhouse. The water from both slopes is carried directly to a large filter, filled with layers of charcoal, sand and small pebbles. From the filters the water makes its way to a underground cistern which is provided with a tight curb. In case the cistern becomes filled, a damper in the pipe above the filter permits the roof water to be discharged through another pipe.

Water from this cistern was used for two days in midsummer by the writer of this article who used the school yard for a temporary camping spot. Though school had not been in session for several weeks, he found the water sweet and palatable. It was quite dark in color but bore no evidence of staleness. Neither sediment nor foreign substances were distinguishable. Moreover, the water was as cold as spring water, and not in the least bit hard.

Feed well the old hens that you intend to sell when they are through laying. Watch the market, and sell them just before the rush sale of poultry begins in the fall. Get all the eggs you can from them this summer, but sell them while the price is still good.

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