Conducted by Professor Henry G. Bell

The object of this department is to place at the service of our farm readers the advice of an acknowledged authority on all subjects pertaining to soils and crops.

Address all questions to Professor Henry G. Bell, in care of The Wilson Publishing Company, Limited, Toronto, and answers will appear in this column in the order in which they are received. As space is limited it is advisable where immediate reply is necessary that a stamped and addressed envelope be enclosed with the question, when the answer will be mailed direct.

H. J.:—"Will you kindly send me a recipe for making grafting wax?"

Answer:—A good grafting wax is made as follows: Into a kettle place one part by weight of tallow, two parts of beeswax, four parts of resin. When completely melted, pour into a tub or pail of cold water, then work it with the hands (which should be greased) until it develops a grain and becomes the color of taffy candy.

Subscriber:—1. Can alfalfa be grown successfully on heavy clay soil which will grow red clover all right? Can it be sown with oats same as clover? If a field were sown this spring how long would it be before the first crop of hay? What does innoculation of the seed mean? How much alfalfa does it take per acre? 2. Which is most production and which easiest grown, mangels or turnips, for cattle or sheep? What is the best variety for heavy clay soil?

Answer:—Clay soil which will grow red clover successfully should be suitable for alfalfa. I would not recommend sowing alfalfa with oats, since the latter crop produces rather too heavy a growth, shading out the young tender alfalfa plant. If you seed a field of alfalfa this spring, it should not be cut before next spring unless the growth is very strong before fall. Innoculation of alfalfa seeds means introduction of the peculiar bacteria which live on the roots of the alfalfa plant. Innoculation is accomplished by feeding the seed with a culture containing the bacteria you wish to introduce. These cultures may be obtained from the Bacteria Department of the Ontario Agricultural College, or from commercial sources. Directions accompanying the package should be followed closely. If the alfalfa seed is of high grade and germinates strongly, from 12 to 15 lbs. to the acre will be sufficient. Large growers of alfalfa use between 12 to 20 pounds to the acre, normally. 2. From a labor standpoint, turnips are looked upon as an easier crop to grow than mangels. As a food mangels contain a little more protein than do turnips, but less starch. As a table suitable variety for heavy clay soil you will do well to consult a reliable seed catalogue.

Farmer:—What will be the best crop to sow on five acres of sandy land for the pasture of three or four cows? Have been thinking of sowing rape, and could I seed it and stand a chance of getting a catch if sowed with the rape? It was sown last year to millet and buckwheat and seeded, but failed to get a good stand of clover.

Answer:—For a pasture mixture on sandy soil, you will do well to sow the following per acre: 1 bushel of rye, half bushel wheat, half bushel oats, and five pounds of common red clover. This mixture will make a summer pasture. In order to get a successful permanent covering, I believe you will have to keep stock off this area for a season and then seed your ground to about 1½ bushels of barley and grass seed mixture, consisting of 10 lbs. common red clover, 2 lbs. alsace, 6 lbs. of timothy, and 5 lbs. sweet clover. In order to make sure of the catch you would do well to fertilize the soil with about 200 lbs. to 300 lbs. of fertilizer carrying 3 to 5 per cent. ammonia and 6 to 8 per cent. phosphoric acid. This should be thoroughly worked into the soil at the time the seed bed is being prepared.

R. S.:—Would be glad to have advice in regard to sowing winter vetch and spring rye this spring to plow under late in summer for fertilizer purposes. Would it be a success or is something else more successful?

Answer:—Half a bushel of winter vetch seed, with a bushel and a half of rye to the acre should be sown. The ground should be thoroughly prepared and the seed drilled or harrowed in carefully. In preparing the ground you will do well to apply about ½ ton of fine ground limestone per acre, harrowing it in carefully. This will make the soil sweet, which condition is most suitable for the rapid growth of vetch. In order to make sure of a satisfactory catch, you will do well to fertilize at the time of seeding as recommended in the last question.

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Mothers and daughters of all ages are cordially invited to write to this department. Initials only will be published with each question and its answer as a means of identification, but full name and address must be given in each letter. Write on one side of paper only. Answers will be mailed direct if stamped and addressed envelope is enclosed.

Address all correspondence for this department to Mrs. Helen Law, 235 Woodbine Ave., Toronto.

S. S.:—Your letter arrived too late for insertion last week. I am afraid the only thing to be done with the rug is to send it to a professional cleaner, explaining the accident. Regarding the scratches on the mahogany desk, an authority informs me that the only remedy is to have the finish removed and a new one applied. This work could be satfactorily done only by an expert.

T. E. O.:—1. When applying turpentine, mix with it one third the quantity of lard and it will not blister. 2. For sore and tender feet use the following powder: Talc, nine ounces; boric acid, one ounce. Mix and shake into the shoes and dust on the stockings after they have been drawn on the feet. This is said to give great relief.

Polly:—Do you use stews as much as you might in the course of your substitution campaign? Do you know how good they are? They may be so varied that you can have a different one every day in the week and all of them delicious. It needs only a small piece of meat to give flavor to a hearty dish. It's a mistaken idea that you must eat a lot of meat to be strong. Meat helps to build up the body but so do many other foods and a little meat with vegetables and cereals gives the body what it needs. All kinds of stews are cooked in just about the same way. Here are directions which will serve for making almost any kind: Cut the meat in small pieces and brown with the onion in the fat cut from the meat. Add the seasoning, two quarts of water and the rice, or other cereal, if it is to be used. Cook for an hour, then add the vegetables except potatoes. Cook the stew for half an hour, add the potatoes cut in quarters, cook for another half an hour and serve. Left over or canned vegetables need only to be heated through. Add them fifteen minutes before serving. Dried peas or beans should be soaked over night and cooked for three hours before adding to the stew.

Reader:—"A contest, something children will like and not too difficult." Here is a flower pastime that I think was arranged by a teacher and used when she took her spring class for a walk. For a prize you may give a basket of posies, or you may award a flower to the child who first answers correctly.

1. What fair maiden lived between two mountains? (Lily of the valley.)
2. What is the emblem of her country? (Maple Leaf.)
3. What did she do each early morn? (Rose.)
4. Give names of her three sisters. (Daisy, Violet and Myrtle.)
5. What was the big brother's name and with what did he write? (Jonquil.)
6. What was her baby brother's name? (Sweet William.)
7. What did he always call his father? (Poppy.)
8. What did the father call to the older son each morning? (Johnny jump up.)
9. What hour did they rise in summer? (Four o'clock.)
10. What bells rang through the valley on Sunday? (Bluebells.)
11. Who preached in their church? (Jack in the Pulpit.)
12. How many came to hear him? (Phlox.)
13. What selection was played on the organ? (Narcissus.)
14. Who cooked the Sunday dinner? (Black-eyed Susan.)
15. What vegetable had they? (Sweet peas.)
16. From what did they drink? (Cups and saucers, or buttercups.)
17. What great event of the king did they desire to see? (Carnation, i.e., coronation.)
18. What fine animal did they see at a circus? (Dandelion.)
19. What accident happened in the barn one day? (Cowslip.)
20. With what was John punished? (Goldenrod.)
21. With what were the girls punished? (Lady slippers.)
22. As John never married, what did he sew on? (Bachelor buttons.)
23. When Lily left home, with what did she kiss her mother? (Tulips.)
24. What did her mother say? (Forget-me-not.)

How and When To Spray

Apple, peach, plum, quince, cherry and pear trees are seriously injured by San Jose scale and will be killed very likely unless freed from these insects. Shade trees are also troubled by scale and also some shrubs, particularly lilac.

The trees should be pruned so as to get out all superfluous wood, which should be completely burned. Leave no stray pieces about with insects on them. This done, scrape off the rough bark so the scale under it may be reached with the spray, as spraying while the trees are dormant is the only remedy.

If the trees are badly infested two sprayings may be necessary. Spray as soon as possible and again just before the buds begin to swell. Wet every part of the tree, or the labor may be in vain.

Lime sulphur is generally used. It is effective on San Jose scale, oyster shell scale, blister mite and scab and also destroys the eggs of plant lice. Oil emulsion may also be used.

In bad cases of scale where the insects have not been discovered until the foliage is on the tree they may be held in check by spraying with fish oil soap, one pound to six gallons of water, or with kerosene emulsion, during May or June when the young insects hatch, depending on the season and locality.

Well cared for trees systematically sprayed are not troubled with scale.

Aphis or Lice

There are two kinds of insects that injure plants, those which chew and those which pierce the foliage and suck the juices. The former are controlled by poisons, but the latter must be reached by contact sprays and be hit by the sprays, which kills them. The biters which chew will be killed when they eat the poisoned foliage, even if they appear after the spray is applied, but those which suck the juices must be hit with the contact spray; the fact that it is on the foliage will not bother them.

There are two forms of aphis or plant lice, one appearing on the tree, the other on the roots. There are several kinds of aphis that attack the foliage of plants, and all are controlled by the contact sprays.

Aphis attack apple, plum and other fruit and ornamental trees. They are small greenish insects, sometimes assuming pinkish or an almost black color. They suck the juices from the foliage, usually feeding on the under side of the leaves, causing them to curl up, dry and drop.

Kerosene emulsion, 10 per cent. strength, or tobacco extracts will rid the trees of them. Spray as soon as the aphis appear and before the leaves curl, as it is difficult to reach the insects with the spray after the leaves roll up.

The root aphis are more troublesome. The dirt around each tree should be removed to a depth of three or four inches in a circle three or four feet in diameter when the tree is growing vigorously. Then soak the space thoroughly with kerosene emulsion, 15 per cent. strength—15 per cent. emulsion, 85 per cent. water—using at least two gallons per tree, and then replace the earth.

Apple Worm

The codling moth is a whitish or pinkish caterpillar half to three-quarters of an inch in length. The adult moth lays its eggs in the spring on the leaves or small apples soon after blooming time. The young caterpillars, about one-sixteenth of an inch in length, enter the apple usually at the blossom end. Arsenate of lead is sprayed into the calyx cup, which poisons the worm as soon as it starts to eat its way into the apple.

When the worms enter the apple they attack the core and remain there about a month, then bore out through the fruit. There are likely to be two generations which must be controlled.

Spray with arsenate of lead, two or three pounds to fifty gallons of water. The first application should be made when the calyx is open and extended so the poison can be forced into the blossom end of the young apple and before the blossom end closes.

The wide open cluster is not right; the stamen crowd upon the pistils, closing the heart of the flower, but just when the petals have fallen, when the calyx is open, is exactly the right time to drive in the poison spray. Later the calyx will close and the worm will be safely sheltered.

Use strong pressure—150 pounds—and spray thoroughly.

Curculio.

Plum curculio, a small grayish brown beetle, attacks plums, apples, peaches, pears and quinces, making a small cut on the fruit under which it lays its eggs. The larva, a small white worm, feeds on the fruit and causes it to drop.

The codling moth spray for apples will control the curculio. Wild crabapples or hawthorn growing near the orchard should be destroyed. Gather all fallen fruit and destroy it.

Plums should be sprayed with arsenate of lead, two or three pounds to fifty gallons of water, just after the blossoms fall. Add to this milk of lime, made by mixing four pounds of fresh slaked lime with sufficient water to dissolve it. Add this to each fifty gallons of the arsenate of lead to prevent burning of the foliage.

Spray two weeks later with the same solution. This second spray is most important and should thoroughly cover the fruit.

Canker Worms

Canker worms feed upon the leaves of fruit and shade trees in the spring and autumn. Arsenate of lead, four pounds, to fifty gallons of water, will destroy the caterpillars when they are young. Bands of sticky substances or cotton bound around the trunks of the trees will keep the wingless female from getting on the trees.

Bud moths attack the terminal leaf buds and blossoms. Where lime sulphur is used before the buds open for scale on apples arsenate of lead, two pounds to fifty gallons, may be added to control the bud moth. Spray again with arsenate of lead alone, same strength, just before the blossoms open.

Tent Caterpillars

The egg masses are laid on the twigs, forming a grayish brown knot-like band. Gather the egg masses in winter and burn them and burn the webs when they appear on the trees. The spraying recommended for codling moth will control tent caterpillars.

Borers

Borers attack apple, peach and other fruit trees, also soft maple, birch and other ornamental trees. They enter the tree through small round holes in the bark, usually at the base of the tree, from which sawdust sometimes sifts out; a discoloration of the bark is an indication of the borers' presence. The only remedy is to cut the borers out with a sharp knife. Watch the trees and get the borers as soon as they enter. A stiff wire can also be used to push up the hole and kill the borer. Go over all the trees in April and again in the autumn.

Painting the trunks at the base with white lead mixed with raw linseed oil is recommended. Make the mixture the consistency of thick house paint and apply early in the spring before May, after the borers have been cut out. Do not use boiled linseed oil or common house paint with a drier in it.

Remove all gum from the peach trees when going over the trees in the autumn, painting the wounds where the borers have been cut out.

(Concluded next week.)

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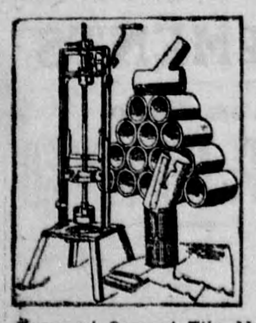

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Poultry

Grain for chickens should be clean and free from mold. Moldy grain will often cause death or result in any one of several diseases common to the digestive tract. Birds affected become weak and inactive and often manifest an intense thirst. Such an individual may be given a teaspoonful of Epsom salts and if recovery is not rapid it should be killed.

No flock of hens is so good but that there are certain individuals which are far superior to certain others. Neither is there a flock of hens that is so small but that it will pay to select a few of the best for breeders. Only a small breeding flock is necessary on many farms, since fifteen hens will lay during the breeding season of two and a half months from 400 to 500 eggs. If each year the best are selected as breeders, remarkable progress can be made in just a few seasons, toward producing a strain of vigorous, large-bodied, late-moulting, high-producing hens. It also means keeping fewer male birds, which at four to five cents a bird per week for feed is a considerable saving.

Method of curing hens of the egg-eating habit: Blow the contents from several egg shells and fill them with plaster Paris, or pulp plaster. Fill a dozen or two—they will set hard in a few hours. Put these in the nests and around on the floor.

Why Trees Winter-Kill.

Have you studied the matter of fruit trees winter-killing, and the cause? In Ontario fruit trees suffer from winter-killing on account of making too late growth in the fall, and the wood is not properly hardened up before the freezing weather begins. It has been found that much of this winter-killing can be prevented by stopping the cultivation of the soil in the orchards early in August, and sowing a cover crop of clover, rye, or any other cover crop desired. This cover crop takes the moisture from the soil, and some of the available plant food, thus preventing the rapid soft growth of the trees late in the season. In consequence the wood growth already made hardens up, and is able to withstand the severe winter weather.

Carrots are third in the list of roots and tubers in nourishing value. Potatoes stand first and parsnips second.

The Sunday School

INTERNATIONAL LESSON
APRIL 28.

Lesson IV. Jesus Rebukes Selfishness—Mark 9. 30-50. Golden Text, Mark 9. 35.

Verse 33. They came to Capernaum—Here he had begun his Galilean ministry and here he was to bring it to a close. We have no knowledge of his being in the town again. He was now to go southward. In the house he asked them—He had probably heard them disputing as they came along and now, having overheard some of the conversation, wishes to learn of their difficulties.

34. Held their peace—It was nothing to be proud of. The fact that he had selected the three to go with him up the mountain may have led them to wonder why they were thus preferred and hence the subject under discussion. Who was the greatest—Their conception of the kingdom about which he had said so much dealt with grades and ranks of service and now naturally they were concerned to know who was the leader among them.

35. Sat down—The usual attitude of a Jewish teacher. Called the twelve—It was needful that the entire band of disciples should know in what true greatness consisted, as it was fundamental to their own success in the future. If any man would be first, he shall be last of all, and servant of all—The humility of greatness and the greatness of humility. Preeminence in the kingdom is marked by service and not by rank; a service which is for all without discrimination. This is the general principle stated.

36. Took a little child—They were in all probability in Peter's house. Was this Peter's boy whom Jesus called to him? He calls the child to his side, lifts him up in his arms and then gives the immortal lesson. It is Mark alone who tells of his taking the child in his arms. For fuller details as to what he said we turn to Matthew's account (Matt. 18)3..Ha5mr thew's account (Matt. 18. 3). There is no picture more beautiful and significant than this—the Supreme Teacher with the child in his arms presenting to his disciples the never-to-be-forgotten object lesson.

37. Whosoever shall receive one of such little children in my name—The child represented the true disciple—docile, trustful, unassuming. In my name—That is, "out of regard for me." The "name" represents all that a man is known to be and do. The name of Christ is all that he is revealed to us to be in spirit and deed. Receiveth him that sent me—To receive a humble disciple in whom we recognize the spirit of Christ is to receive Christ himself, and as Christ is the sent of God it is essentially to receive God himself.

We have now a transition to an incident reported by John of one who was rebuked for casting out demons and who was not one of Jesus' disciples.

38. John said—The first time in which John appears as spokesman in the Synoptists, but his name occurs in connection with James when the request was made for the chief places in the kingdom, and it is these two who at another time propose to call down fire upon a Samaritan village because the people had been discourteous to the Master. We saw one casting out demons in thy name—We are not told where this incident took place. It occurred to John to tell it because, no doubt, Jesus had referred to receiving one in his name. We forbade him—By using the name of Jesus and not being in the regular company of disciples John thought this outsider was taking a liberty with the name of Jesus; he tried to stop him.

39. Forbid him not—Jesus' influence must have wrought mightily outside of the circle of his immediate followers, inciting them to genuine works of power in his name. To rebuke such an one was an excess of zeal. We have here a principle of wide application. There is surely Christian grace and power in many circles which do not bear our name. Well and good if they honor the name of Christ.

40. He that is not against us is for us—In another connection he said "He that is not with me is against me" (Matt. 12. 30). The cases are in principle the same. No man can be against Christ if he has faith, though imperfect, in his name. One cannot be a friend of the Master if he has so little faith in him as to think that his works are the works of Satan. In one case it is our attitude toward others, in the other it is our inner attitude toward Christ.

41. A cup of water to drink, because ye are Christ's—John's question had broken in upon Jesus' talk concerning the childlike spirit. He now resumes that topic. He speaks of the worth of the smallest service rendered to a disciple in the spirit of the disciple.

42. Whosoever shall cause one of these little ones . . . to stumble—Jesus is ever the champion of the weak. A spiritual injury done to one of the humblest of his disciples brings severe consequences to the guilty party.

Start with pure stock—that will make the increase and eggs for hatching marketable at better prices.

Getting lodged trees to come down is always hard, dangerous business. We have learned that by chopping a good-sized piece out of the tree to be felled, in the direction we wish the tree to lie, and then sawing on the opposite side with a cross-cut saw, we can throw the tree about where we want it. A wedge driven into the saw-cast back of the saw will hasten and help matters.