

Soils and Crops

This Department is for the use of our farm readers who want the advice of an expert on any question regarding soil, seed, crops, etc. If your question is of sufficient general interest, it will be answered through this column. If stamped and addressed envelope is enclosed with your letter, a complete answer will be mailed to you. Address: Agronomist, care of Wilson Publishing Co., Ltd., 75 Adelaide St. W., Toronto.

When to Spray and What For.

All the spray mixtures it is possible to use on a tree will not do much good unless the right applications are made at the right time. These directions will tell just when to spray and what for.

Spraying Apples.—Four or five sprayings are necessary. Begin spraying on the season and how badly the orchard is infested with insects and disease.

First spray: Apply just after leaf buds burst but before blossoms open. Use either Bordeaux mixture 4-4-50, or commercial lime-sulphur testing 32 deg. or 33 deg. Baume diluted 1 to 40. (See next article for directions for making Bordeaux mixture.) Add two pounds of lead-arsenate to each fifty gallons of the spray mixture. This is for control of scab, curculio and canker-worm.

Second spray: Just after the blossoms fall use same materials as for first spray. This is for control of the codling-moth, and must be applied with a great deal of force. A power sprayer is best.

Third spray: Two or three weeks later than second spray. Same materials as for first spray. If blotch is bad in the orchard, use Bordeaux mixture 4-6-50 instead of lime-sulphur: add two pounds of lead-arsenate to fifty gallons of spray material.

Fourth spray: Nine weeks after the third spray. Use same material as for first spray. This is for control of scab, brown rot and second brood of codling-moth.

Fifth spray: This is necessary only where blotch, black rot, bitter rot and other fungus diseases are troublesome. Use same materials as for third spray and apply two weeks after fourth spray.

Pears and Quinces need the same general treatment as apples, except that when lime-sulphur is used it should not be quite so strong.

Spraying Plums.—A dormant spray of lime-sulphur is applied for San Jose scale any time during the dormant season. During the growing season several sprays are necessary.

First spray: Just before blossoms open apply Bordeaux mixture 4-4-50. Add two pounds of lead-arsenate to each fifty gallons of spray material. This is for control of brown rot and curculio.

Second spray: Just after blossoms fall use same materials as for first spray.

Third spray: Same materials as second spray, three weeks after petals fall.

Cherries need the same general treatment as plums.

How to Make Spray Mixtures.

To make Bordeaux mixture take four pounds of copper sulphate, four pounds of quicklime fifty gallons of water. Dissolve the copper sulphate by putting it in a coarse cloth bag and suspending the bag in a barrel partly filled with water.

Slake the lime in a tub and strain the milk of lime into another tub or barrel. Pour the dissolved copper sulphate and the milk of lime into the sprayer tank, or into a supply tank, at the same time. Add enough water to make fifty gallons.

For Bordeaux 4-6-50 use six pounds of lime instead of four.

To make self-billed lime-sulphur 8-8-50 referred to in the first article, use eight pounds of unsalted lime, eight pounds of flowers of sulphur,

fifty gallons of water. Place the lime in a barrel and add almost enough water to cover the lime. When the lime begins to slake add the sulphur, which should be made into a paste by mixing it with water. Stir the cooking mixture and add water as needed to keep it in the form of a thick paste, which should become thinner as the mixture cooks. In ten or fifteen minutes the heat from the slaking lime will cook the mixture and enough cold water should be added to make fifty gallons. This is the standard summer spray for peaches.

How to Get a Stand of Alfalfa.

Getting a stand of alfalfa is mostly a question of soil. If the soil is right your efforts will be crowned with success. Generally the problem is to make alfalfa succeed after you get the stand. Alfalfa requires a moderately dry soil, well drained even during rainy weather.

If the soil becomes water-logged for many days the alfalfa will become yellow and unthrifty. It needs moisture, but it likes to have the moisture in the air and soil at the same time. This is the reason alfalfa does better in well-drained soils.

Although drainage is a big essential in successful alfalfa growing, an occasional overflow of a creek or river will do no harm if it comes during the winter, or if the water is moving in summer.

Alfalfa will not thrive, nor even live long, without bacteria helping it. It has become used to them and depends upon them. Alfalfa-promoting bacteria will not live in all soils.

Carbonate of lime makes the alfalfa or nitrifying bacteria thrive. They do not seem to be able to live without it.

While it is not known definitely why carbonate of lime makes the nitrifying bacteria do so well, many alfalfa growers advance the theory that alfalfa plants give off certain substances which are poisonous to the bacteria. That is, the alfalfa roots give off a poison that is injurious to itself and to other alfalfa roots.

When there is much carbonate of lime in the soil this poison is in some way neutralized and the alfalfa is kept in health and vigor.

In addition to making the soil a healthful home for good and useful bacteria, carbonate of lime conserves humus and stops a waste of nitrogen. When plants decay in the soil nitric acid is formed. This is soluble and, unless taken up by the plants, soon leaches away. If there is a supply of lime present, the nitric acid unites with the lime to form calcium nitrate. This locks up the nitrogen and holds it.

Since the lime naturally sinks in the soil, it is best to put it near the surface. It ought to be mixed as perfectly as possible with the soil, as it is not effective when left in lumps. This is because the lime is not in contact with enough of the soil particles.

As ground limestone is harmless, a person may use as much of it as he wishes. It is pleasant to work with and doesn't burn like caustic lime when it gets on the skin, nor does it cake together if it happens to get wet. One may put it on the soil at any time. It may be put on with manure, as it does not burn out the humus. Soil acids attack the particles of limestone and are neutralized, but the lime itself does no harm, no matter how much is used.

shelter, maintenance and labor are least, while grains cheapest and greatest. Of these the greater number is fattened on pasture. It is found that pigs fed corn alone on bluegrass pasture make equally as great gains as pigs fed in dry lot on a balanced ration. Clover or alfalfa give better returns than bluegrass or timothy when corn is fed in conjunction. Corn alone on abundant clover pasture forms an ideal ration, excellent in balanced ration of corn and tankage or middlings in rapidity of gains and excellent in other rations on pasture when rate and economy of gains are considered.

A satisfactory system of pasture feeding for pigs farrowed in April and are ready for pasture in May is: The previous fall a field is sown to rye or winter vetch, furnishing a good crop for pigs when they are turned out; one acre of this supplies 100 pigs and their mothers for about a month; also a ration of corn meal, tankage or skim-milk is fed them.

About the first of June the pigs are weaned and placed on clover or alfalfa, which furnishes green feed for the next five or six weeks. About the 15th of July they are turned in a pasture of field peas and oats, thus supplying part of the grain ration; the acreage is larger because the pigs are larger. Green sweet corn is also fed at this time but not before it reaches the roasting ear stage, sparingly at first, being gradually increased. With this there is little or no need of corn meal ration, until

Whether a hog raiser should feed lard or bacon hogs will depend largely on the location of his farm. Whenever possible home grown feedstuffs should be used, because feeding purchased feeds is not always conducive to profit. If the farm grows an abundance of corn and clover or alfalfa it will be more profitable to grow the lard type, while on the other hand, if the main feeds grown are barley, peas, oats, etc., having a narrower nutritive value, bacon hogs can often be raised to a better advantage.

By far the greatest number of hogs are fitted for market during the summer and early fall months. During the summer the requirements for

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shortly after the green sweet corn is ready to be fed. This is also fed in the roasting ear stage and when the bottom of the stalks become woody only the top portion is used. The pigs are kept on pasture, and corn which becomes more mature is fed until fall or early winter, when they are ready for market. When possible it is a very profitable plan to hog the corn down, thus saving a great deal of labor. In this case a self feeder with tankage should be before the hogs.

The feeding of hogs for market will be found to be one of the most profitable departments of the farm.

Apple Bud-Moths and Their Control in Nova Scotia.

The apple is attacked by a number of different insects. In Nova Scotia the caterpillars of the bud-moths are probably the cause of more loss than all the other insects combined. The Entomological Branch of the Dominion Department of Agriculture has just issued Bulletin No. 16 entitled "The Apple Bud-Moths and Their Control in Nova Scotia," by G. E. Sanders and A. G. Duxton. This bulletin of 24 pages gives an account of the life-histories of the four destructive bud-moths which occur in that province. The chapter on the control of these insects discusses re-

sults obtained from spraying experiments, following which definite control measures are recommended. Useful information is also included on parasitic insects and other natural enemies. Fourteen illustrations appear in the bulletin. These show stages of the insects, and various stages of the blossoms and fruit, various stages of the insects, etc. This publication will be of much value to apple growers in eastern Canada. It can be obtained free of charge on application to the Publications Branch, Department of Agriculture, Ottawa. A technical edition of the bulletin giving scientific descriptions, etc., has also been published. This will be of special interest to economic workers. Enquiries regarding insects in general should be addressed to "The Dominion Entomologist, Department of Agriculture, Ottawa, Ont."

Three bushels of oats an acre— and be sure to sow red clover, sweet clover, alfalfa, or some other legume with it.

Mustard plants should be sprayed with a twenty per cent. solution of iron sulphate as soon as possible after the plants begin to appear. This makes them homelike enough to die and not hurt the small grain at all.

WHEN CHILDREN CANNOT ATTEND SCHOOL

By JANET THOMAS ORMSTON.

There is scarcely a district in the country that has not some child, or children who, for some reason or other cannot attend the public school. It may be that some physical disability makes it impossible for him; perhaps mental deficiency debars him from entering classes with other children, or, if he is a very little child, it may be that he is too far from the school to walk there and back.

Whatever the cause, the child who does not attend school will be seriously handicapped all through life unless an adequate substitute for the school education is provided. In that case his present misfortune may eventually prove to be his good fortune, provided the home instruction is made all that it is possible to make it.

Mothers may feel that it is out of the question to start him in the paths of learning themselves. But advanced knowledge is not so necessary as is an understanding of the child, and who should understand a child better than his own mother? Nor does it take a great amount of time. Once a mother gets well started in the teaching of her child she will find it difficult; very likely she will become fascinated with the work. It is a wonderful thing to watch the daily mental development of a child. The pity of it is that so few mothers have the best opportunity for observing it.

The thing that will bother most the mother who knows nothing about teaching is the method to employ. The old a, b, c method has been almost discarded, because a, b, c means absolutely nothing to a little child. The "work and play" method shows the best results according to mothers who have tried it. It would doubtless be best also for schoolroom instruction were it possible to employ it under present conditions in the schools. However, it is not schoolroom instruction in which we are interested just now.

The work and play method is really nothing but guided play. All of the child's amusement is made an aid to his education. He is not told that he is learning things, no set task is given him. He absorbs knowledge by the use of the games which he is led to play, by the answered question, by the suggestion here and there, as a sponge absorbs water.

The instruction that goes with the games all seems incidental and a part of the play.

Even a tiny child can learn the names of colors, learn them understandingly as he looks at a ribbon, at the grass, at the sky. This will train the eye and the powers of observation. If he knows, for example, the color red, and mother some day writes it on the blackboard in red ink it will take him only a little while to recognize the written word as readily as he does the color itself. If she helps him when he is playing with his blocks it will soon be an interesting part of his play to spell the word red.

Games will teach the numbers. Let a child play with a box of tooth-picks and have him sort them into piles of two. That is nothing but fun. But he learns how many two are. Later on he is delighted to be more acquainted with the figure and

the word two. He learns what one-half is when he divides his apple evenly with his playmate and he will soon understand the figure one-half.

Pictures of birds and animals in the natural colors are of great educational value. Children learn the names of these because they want to and they are eager to have stories told about them.

The reading of stories and verse to children and the telling of stories is one of the leading helps in this method of education. There is no limit to what a taste for right literature may do for a child, and especially for one who is any way handicapped in life's race. In time, the mother may have the children read to her for her entertainment, not in the recitation of a lesson. They will forget themselves and do their very best in reading for another person's pleasure.

There are a hundred suggestions that might be given, but in so brief an article only an idea of the method can be presented. Every mother who takes up the work will find suggestions continually coming to her and she will herself develop, although in a different way, almost as rapidly as does the child.

A word about the child who seems mentally deficient. In too many cases no effort is made to educate such a child. This is a culpable mistake. If he had an atrophied muscle it would surely be given nourishment and exercise in the hope of developing it. Very often a child "not bright" can be drawn out little by little until finally he ceases to be subnormal. And he is far more likely to respond to any such efforts right in the home circle than he is if placed among strangers. Colors and bright pictures of animals, birds and flowers often appeal to such a child more than anything else. But it will rest with the mother-teacher as to ascertain what particular thing is most likely to interest the child and start the raising of the curtain that obscures the mind. Something will probably do it and infinite patience must be exercised until that something is found.

It is interesting and inspirational to know what mothers have actually and easily accomplished by this method. A little girl, now five years old, had lost the power of speech through illness when she was a wee baby. Her mother began teaching her by the work-and-play method while she was still a baby and gradually drew her out until she could speak. She recovered fully the power of speech before she was four years old and is ahead of the always normal child in every way.

The three-year-old brother of this little girl can write on the type-printer. While this may seem precocious, still it is any more so than when a child of the same age can spell words with his alphabet blocks? It is simply a different method of playing very nearly the same game.

The three-year-old son of Mrs. Wright knows every color and can read many words, while his big sister of ten has been writing verse for several years—and the verses are good. Mrs. Wright has used the work and play method with both of these children.

Your Health

BY THE MEDICAL EDITOR

Dr. Huber will answer all signed letters pertaining to Health. If your question is of general interest it will be answered through these columns; if not, it will be answered personally if stamped, addressed envelope is enclosed. Dr. Huber will not prescribe for individual cases or make diagnosis. Address Dr. John B. Huber, M.D., care of Wilson Publishing Co., 73 Adelaide St. West, Toronto.

Stomach Ulcer.
Stomach or gastric ulcer may result from a blow on the abdomen, or from chronic hyperacidity (excess of acid on the stomach), chronic catarrh of the stomach, blood poverty (anemia), heart or kidney disease. It is the most common in women between twenty and thirty, especially housewives and domestic; among men shoemakers and tailors are most frequently attacked.

The usual symptom is pain between the breastplate and the navel and in the back, usually sharp, increased at once by food intake, and relieved by vomiting. And when the stomach is empty there may be, if not pain, a gnawing and burning sensation which pressure may relieve. Then later comes spitting of blood which has a ground coffee appearance, gradual loss of flesh and strength, dyspepsia and serious anemia. We have to fear perforation of the ulcer into the abdomen, with grave shock or hemorrhage, or the development of cancer, or death from starvation. A yet a patient well attended to may get well, the ulcer healing with scar tissue in the stomach wall. Some people who have gastralgia (neuralgia of the stomach) may imagine they have ulcer. Sufferers from peptic ulcer ought to give up all work and rest in bed most of the time for several months. Their diet at first should consist practically entirely of plain milk or buttermilk (having a tumblerful every two hours), with the white of eggs and beef-juice. After several weeks eggs, chicken, cereal and scraped beef may be added. They should take thirty grains of bismuth subcarbonate three times a day. For the pain sweet spirits of nitre, a teaspoonful in water, or chloroform water, in tablespoon doses. For vomiting cracked ice is preferable to water (a teaspoonful every fifteen minutes) or a mustard plaster over the stomach.

ach. For thirst of any kind cracked ice is preferable to water. For hemorrhage the doctor imperatively and at once. No food until he comes; in such cases the surgeon may have to be called in.

Questions and Answers.
Freckles.—What is the cause of freckles on the face? Is there anything I can do to take them off?

Answer.—Freckles appear mostly in fair-haired women with delicate skin. They are caused by exposure to strong winds and to strong sun rays. Their temporary removal is not difficult. Permanent removal is almost impossible. Those who have freckles are likely to consider them blemishes. This is an erroneous point of view. They are really signs of a good complexion and good constitution and they ought to be considered "beauty spots." Local preparations often contain corrosive sublimate and other substances which may endanger the real skin—the derma. In any event the susceptibility of the skin varies with the individual and what may not hurt one might severely injure another. The following ointment (to be had of any druggist) may at any rate be pronounced "harmless." Ammoniate of mercury, bismuth subnitrate, of each one dram; ointment of glycerine one ounce, to be applied every other night.

Psoriasis.—1. Is Psoriasis in the blood? 2. Can it be cured? 3. Is it hereditary? 4. Are such people otherwise healthy and strong? 5. Will it turn to Bright's Disease? 6. Is it contagious?

Answer.—1. Psoriasis is not a blood disease. 2. Yes, but the cure is very difficult. 3. In some cases it is hereditary. 4. Usually they are healthy and strong but of a nervous temperament. 5. It will not turn to Bright's Disease. 6. It is not contagious.

It will not be ground wasted to set out fifty or sixty raspberry canes this spring.

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LIVING UP TO IT.

Grandma was leaning forward eagerly, with her little thin face tense and her shaking hands cupped about her best ear. Grandma always liked to know what people were talking about, but it was seldom that she monopolized the attention of guests as she had been doing with John Edington the past hour. It was not only that she wanted to hear—she wanted to talk. Everything that John told her of France reminded her of things that had happened in her girlhood, when she had been an army nurse. Finally, Isabel could stand it no longer.

"Aren't you getting pretty tired, Grandma?" she asked.

Grandma shot a quick glance at Isabel's face. There was nothing warm in it. Suddenly Grandma realized.

"I—I didn't mean to talk so much," she apologized. "I kind of lost myself. It brought things back—so— all those boys—"

John Edington had risen as Grandma rose. His face was not cold; it was gentle and understanding; and he gave Grandma his hand with a manner that held something deeper than courtesy.

"You understand, Mrs. Fraser," he said simply. "You've been through it yourself. Nobody can possibly understand who hasn't."

Isabel, excusing herself, went upstairs with Grandma. When she came back she was her usual pretty, graceful self.

"It's so wonderful to think it's all over," she said.

John Edington was looking deep into the fire. He answered slowly: "What's over? Most of it's just begun."

"Why, the fighting, of course!" Isabel said in surprise.

"Perhaps. With all our hearts we hope so."

"Of course the reconstruction work is just beginning," Isabel admitted.

John Edington shook his head. "I didn't mean reconstruction work just then—not the kind of reconstruction that you mean, at least. I meant—w—, here's a sample: There's a certain shot-piece—well, I'll lay up at the front that the Germans in their last retreat stripped of every man, woman and child able to travel—literally. They left no one except the crippled and bedridden. It was two days before we could get there with the Red Cross supplies; the boys got in before us. It had rained after the Germans left. They found the sick lying in pools of water in roofless houses. They waited for no directions, those boys; they went to work with what they had. When we came up I went into what had once been a house. I saw a bit of smoke fluttering, so I knew that some one had made a fire. I found a Tommy sitting before it. For warmth! Not on your life! In his arms, fast asleep, was a little skeleton of an old woman. There were no dry beds, remember—nothing. He had been holding her for hours. That's the kind of spirit that I mean we have to live up to back home, or we're unworthy of all that's been done over there."

For some reason, Isabel's cheeks grew hot.

Clearing Chimney of Soot.

During these days of increased use of soft coal, chimneys and flues become quickly clogged with soot which very often results in the burning up of the building.

The old remedy to remove the soot as a fire preventative measure was to throw salt on the fire. No doubt this helped matters, but the best way to get rid of soot-clogged flues and chimneys is to burn your old worn-out dry cell batteries.

This is an easy matter and very efficient. Merely get a good hot fire going, knock the pitch out of the top of the batteries, as it may make a clinker, then throw the old batteries on the fire, open the lower draft, and the damper in the chimney. This causes the batteries to burn quickly and the zinc and other ingredients used in the cells, having a chemical affinity for carbon dioxide (soot), quickly converts it into gas.

If this is done whenever batteries are changed on the gas engine, tractor, motor car or telephone, the chimney and pipes of the stove or furnace will be kept practically sootless, and at no expense, since batteries that are worn out are worthless for any other purpose, but of value in this respect—if only as a fire preventative.

Plant a silage crop and build a silo to put it in; 'twill cut down the amount of pasture you need for the cows.

If we wish to be pretty sure that our oats will escape rust, we must sow them early. It is the late-sown grain which is stricken by this disease.

The manure from a horse or cow would be worth \$25 to \$30 a year if all of it could be saved in good condition and returned to the land. In actual practice it is worth from \$5 to \$10, or even \$20, according to the locality, the methods used, and the kinds of crop grown. The way hogs are ordinarily handled, their manure is largely wasted. But when they are used to pasture down crops, they help quite as much as cat and horses, or even more.