

chards, and indicated the proper treatment. I purpose in a future issue to deal with the questions of packing, transportation and marketing of our orchard products.
Simcoe Co., Ont.

The Farm Garden.

BY GEORGE C. LLOYD.

The garden is the most valuable part of the farm and is often the most neglected. There is no other part of the farm that yields such quick returns, bringing such an abundance of good health and pleasure, and why a farmer should neglect his "truck patch" and buy his neighbor's or buy in town, or, too often, go without, has always been a mystery to me. By all means get the little folks interested in it, give them a bed for their very own and help them to arrange it. Let them have a few onion sets—the largest ones in the sack—a few peas, some radish seed, and a few bright-colored beans. Peas, onions and radishes are things that children—and old folks, too, for that matter—crave, and too often are the little darlings scolded for making a raid upon them before they are large enough to pull. Give the children a few bright flowers to tend, and they will lend you many a helping hand in return. The wife and grown-up daughters can do wonders in weeding and light hoeing. It won't hurt them a bit. If there is any hard work to do, instead of the man of the house taking a whole day off to go to town, let him send his wife or some of the young folks and give the garden a few extra licks, and the way it will respond will surely surprise you. There can be no time set down when to begin work in the garden, as localities and seasons differ. Peas, radishes, onions, lettuce, parsnips, etc., should be planted as soon as the ground can be worked. Beans, beets, and all tender plants should not be planted until the air and ground become thoroughly warm. I like to plant melons, cucumbers, beans, etc., in rows, so I can cultivate them with a single-horse double shovel. For onions, beets, etc., I plow the land into beds about six feet wide. This makes a handy bed to weed, as you can reach half way across on each side and throw the weeds in the path, where the sun soon finishes them. Plant rows about fifteen inches apart. I plant peas in double rows, eight inches apart, and five feet between double rows. I have long discarded all peas but the Champion of England, the Black-eyed Marrow-fat, and the Prize Taker. These are the three grandest peas planted. Plant them as above described and stick them with brush—two rows in one—and it is a pleasure to pick them. Stick them when from four to six inches high, after a rain while the ground is soft. Brush five feet long should be used. What the garden should contain is a question that every one must decide for himself. I have narrowed the list down to the following: Beans (the pole variety) I plant in corn, beets, cabbage, cucumbers, carrots, lettuce, melons, onions, peas, parsnips, peppers, radishes, salsify, tomatoes, and turnips. Sweet corn, pumpkins, squash, and potatoes are planted in patches by themselves in the field. A berry patch is indispensable to the freeholder, but it is almost a waste of time for a renter to interest himself in one, as someone else is pretty sure to reap the harvest.—*Homestead.*

Scab of Potatoes.

Prof. B. D. Halsted, Botanist at the New Jersey Experimental Station, has recently published the results of his six years' painstaking and ingeniously varied experiments on the destructive but obscure disease of potatoes, radish and beets known as scab.

The experiments covered a wide range of investigations, including susceptibility of different varieties, seed fungicides, soil fungicides, longevity of the germs, and methods of inoculation.

The following is a brief summary of the results reached:

Of seven standard varieties of potatoes tested, "Early Rose" was the most susceptible to scab.

Scab germs retain their vitality in the soil for at least six years.

On one experiment plot—11 by 16½ feet—one bushel of scabby potatoes was spaded into the soil; on another plot the manure from feeding a bushel of scabby potatoes to young cattle was spread. The scabiness was many times as great in the former plot as in the latter. These are typical of several experiments on soil infection; and while the particular results varied, it is not far from the correct to say that the scabiness in plots of the first class was eight to twelve times as serious as in those of the latter class. It was clearly established that uninfested soil can be readily contaminated by planting scabby potatoes in it, and that it will retain for years its liability to inoculate clean seed.

Experiments to kill the germs in the soil were made with lime, gas-lime, kainit, corrosive sublimate, sulphur, Bordeaux mixture, cupram, oxalic acid, sulphate of ammonium, bisulphide of carbon, sulphide of ammonium, sulphuric acid, coal oil, creolin, formal, and benzene. Lime seemed to make the potatoes more scabby; corrosive sublimate reduced the disease. Sulphur alone yielded results sufficient to warrant its recommendation as a preventive of scab. The freshly-cut seed should be rolled in sulphur powder, and 300 lbs. per acre may be applied in the open row.

The washing or soaking of scabby seed potatoes in solution of corrosive sublimate has been the

remedy advised of late years. Prof. Halsted reports that such treatment has not proved of much practical value when potatoes were planted in scab-infested fields.
J. D.

Why Not Improve Your Home Grounds This Spring?

BY THE SECRETARY MINN. STATE FORESTRY ASS'N.

There are few persons who do not appreciate the beauties of nature, more or less; few who can withstand the attractions of a good and beautiful home. As a duty of every citizen, not only to himself and family, but all who come in contact with his influence, he should endeavor to make his home what a true home should be, a place where contentment reigns supreme. In no way can a place be made more attractive in appearance or be enhanced more in value than by the expenditure of a little time (not always money) in endeavoring to beautify it by taking advantage of nature. Tastes differ; no two of us are alike. But by going at it with a little interest in the work, and possibly a good suggestion from some older or more enthusiastic head, you will count it a pleasure every time you have occasion to look upon the effort put forth. If a thing is worth doing it is worth doing well, and hence, before starting in a haphazard manner, study the question a little. What trees, vines, shrubs, etc., will do best here or there, and also give the most pleasing results? Figure on room enough, for they will be large some day. There are few places that cannot be touched up some, and many that will stand considerable, and now is the time to plan on it. Improvements of this nature have a great deal to do with the prosperity of any place. The value of surrounding trees, etc., effects not only their local position and neighborhood, but all who come in contact with their influence. Hence we might say they are public property, or should be regarded as such.

You cannot begin too soon to plan on decorating your home grounds. Try it and see if this does not increase the interest in your home, in your neighbor's home, in the welfare of the community in general. Having that spirit at heart, success cannot but favor your efforts, "for in unity there is strength."

Testing the Bordeaux Mixture.

SIR,—In the last issue of the ADVOCATE, Prof. Sears points out an error in my article on spraying, in reference to testing the Bordeaux mixture. It should have been ferrocyanide of potassium. It was an oversight on my part. As it is a pretty long name, I have been in the habit of referring to it as the cyanide test, to make it short. We might call it yellow prussiate of potash, which is the same thing, but does not make it any shorter. Perhaps the latter would be a better name to use, as there would be less danger of making a mistake. Cyanide of potassium is a combination of cyanogen and potassium, while ferrocyanide of potassium, or yellow prussiate of potash, is a combination of cyanogen, potassium and iron. I strongly advise using this test for Bordeaux mixture, and thank the Professor for calling attention to the mistake, or, rather, omission, in the article referred to.
Simcoe Co., Ont. G. C. CASTON.

ENTOMOLOGY

Entomology to the Agriculturist.

A meeting of Territorial farmers was held in Archer's Hall, Innisfail, Alta., on April 4th, for the purpose of exchanging experiences concerning insects that have been troublesome in 1899, and, by invitation of the Innisfail Agricultural Society, to hear an address from Percy B. Gregson, president of the Northwest Entomological Society, on "Pernicious Insects."

All injuries by insects conform with certain fixed rules, and depend upon the structure of the mouths of the insects, which are all made upon one or other of two plans. They are either in the shape of jaws which nip the food, or in the form of a hollow tube, by which the juice, or blood, is sucked up. If, therefore, we find our potato leaves have portions eaten away, we know that it has been attacked by some insect which nips the food off with jaws, and that some kind of poison must be applied to the food, which the insect will consume with the leaf. So where the attack is made by some insect that sucks, such as plant or animal lice or flies, which pierce their tube through the surface, we know that this requires some remedy which destroys them by contact with their bodies, because they would push their tube through any poison on the food plant without being harmed, and suck from beneath the surface. No insect breathes through its mouth, but through several minute holes, called spiracles, on each side of the abdomen. That is why we apply oil to kill lice on cattle. The oil spreads over and clogs up the breathing holes. Larvæ or grubs, with few exceptions (such as the maggots of bot flies), also breathe through spiracles at the sides.

TREATMENT FOR CUTWORMS.

Bearing these broad principles in mind, let us notice now some of our own familiar insect pests, and see how we ought to do in the way of discovering them, and of "active" and "preventive" remedies. We find one morning our young cabbages and parsnips or onions eaten off at the surface of the ground. The nature of the damage shows the enemy to be a nibbler, and a poison of some kind at once suggests itself to us as the proper thing to give him. Further investigation by scraping in the soil

just around the plant attacked will discover the enemy to be a "cutworm," of which there are several kinds, and as he evidently is very fond of young succulent plants, bundles of some succulent weed, such as "lamb's-quarters," dipped in a strong solution of Paris green (2 ounces to a pailful of water) and placed between the rows of the crop will lure many to their doom. The cutworm is very fond of sweetened bran, so a little Paris green mixed with sweetened bran and laid around or near the cabbages will attract the culprit and destroy him. (Take, say 50 lbs. of bran and slightly moisten it with water and sweeten with a little sugar; then mix well with it 1 lb. of Paris green.) Cutworms do not tunnel from plant to plant, but pass over the surface. They can nearly always in the morning be found just under the soil near the plant they have attacked overnight, and so can be dug out and destroyed. These are what are called "active" remedies—applicable where the damage is in actual progress. Prevention, however, is always better than cure, and so wherever possible we ought to adopt "preventive" measures. Moths are always attracted by vegetation, for they must have somewhere to lay their eggs, and as our common cutworm moth lays its eggs in the fall, the clearing away of all weeds, garden refuse, cabbage stalks, etc., will also clear away those cutworms which hatch in the fall, or else starve them; and will also prevent the late moths from laying their eggs in that locality. Gardens which are allowed to become weedy in the fall are almost certain to be troubled with cutworms in the spring. Our common or garden cutworm is not a climber, so wrapping a piece of paper round the stem of the young cabbage when it is planted out is another preventive measure.

RED TURNIP BEETLE.

Or perhaps on another morning, at the end of July or beginning of August, we find our turnip leaves being eaten by a beetle something like the Colorado potato beetle, but having only three stripes down its back. It is the red turnip beetle. It eats the leaves of our turnips, and therefore is a biter, and should be dealt with as such. Hence, for an active remedy we should place poison on its food by applying Paris green solution (1 lb. to 100 gals. of water), and stir in also 1 lb. of quicklime, or in smaller quantities of ½ ounce of Paris green, ½ ounce of quicklime, and a pailful of water. In mixing Paris green, Dr. Fletcher recommends in his valuable bulletin, No. 11, on "Noxious Insects," that it should just be made into a paste with a small quantity of warm water, and the paste afterwards mixed with the larger amount of water required, and if it does not adhere readily to the leaf, a little soap added to the water will overcome the difficulty. A little investigation around the base of the turnip, under clods, etc., soon after discovery of the beetle, will reveal to us where it lays its eggs, so that a good preventive remedy would be to grow a different crop on the place the next year. Rotation of crops is one of the surest preventive remedies that can be adopted in all cases, because very many insects lay their eggs in the fall in the vicinity of the recent food of the larvæ, and when the larvæ hatch in the early warm days of spring and find either no crop or a strange crop, they will starve.

HESSIAN FLY.

In the Territories, as yet, there is no serious trouble reported as caused by the Hessian fly, but it is an undeviating law that insect pests follow cultivation, so we must not be sure of always escaping. We notice among our ripening wheat, or barley it may be, many stems broken down at a joint, and examining a strand we shall find at the point where it has broken down (usually at the first or second joint), if the Hessian fly larva has been at work, one or two small objects looking like "flax-seeds." This is the chrysalis of the larva of the Hessian fly. In this latitude (with our September frosts) this chrysalis would probably not hatch till the following spring, when the fly would emerge to lay its eggs on the blades of young wheat or barley. The young larva, on hatching from the egg, works its way down the groove of the leaf to the stem, where it remains until the approach of harvest, sucking the juice. In warm climates this fly produces two, or even four, broods during the year. Although after the fly has once attacked the grain there is obviously no way of destroying the larvæ except by also destroying the crop, preventive measures—i. e., to prevent future injury—can at any rate be adopted. I wish to emphasize the great value of warding off an attack of injurious insects by preventing their breeding. There are various ways of doing it. In the case of the Hessian fly, for instance, by a proper attention to the date of sowing wheat or barley, by timing the sowing so that the young blade should not appear till a week or ten days after the fly hatches; for the fly, when it hatches, must soon lay its eggs, and not finding any crop, must go elsewhere. The careful burning of all screenings and other refuse from the threshing mill will destroy large quantities of the "flaxseeds." This refuse should always be burnt, whether there be Hessian fly or not, as it contains many weed seeds. The stubble should also be plowed under, and some crop other than a grain should be grown the following year. Any special wheat that has a natural tendency to stool or throw out lateral shoots is also less apt to be seriously injured by the fly. The fly is like a very small gnat or midge, and if we should notice it flying about our young crop, application of fertilizers so as to produce a strong, healthy growth will enable many a plant to survive and overcome an attack. (TO BE CONTINUED.)