

use a brick or a piece off the end of a 2 by 4, and press it down pretty tightly. Then over the surface we sprinkle a light layer of sand. This is to prevent the surface from becoming sloppy after watering, thus effectively forestalling the caking of the soil, which would, if not prevented, smother the seedlings. It is wise to cover the trays with a piece of paper or old sack to still further prevent the possibility of baking and also to get out of watering frequent-baking and the fewer waterings they get till the first transplanting the less danger of damping off. As soon as the seeds are in, we water with warm water, not boiling as is done with some seeds, such as egg plant, but it also should have more than the chill taken off. This will stimulate germination, and as we are on a time limit they need pushing. Place the trays where they will get bottom heat, and in a temperature of about 80 in the day and 75 at night. Keep the thermometer down close to the trays. If you have a green-house you can control the heat easily, but with hot beds it is more difficult to keep the temperature even, yet it is possible to keep the temperature even, and there are many fine plants grow out of beds. After the plants are up, go through the rows with a table fork and stir, not to a great depth, the surface, to prevent any baking that may have started and also to allow air and heat access to the ground.

In this stage you may have trouble with your plants in the form of damping off, which as a rule, is caused by excessive moisture and impure air. Hence it is better to err in light watering at this time and use it warm. When watering, see that the moisture goes right to the bottom of the trays, for the roots, even of these small plants, if the soil is rich will spread and run all over in a most surprising manner. As soon as the plants show the first true leaves they are ready and should be moved along to the next stage, otherwise the roots will begin to crowd and you will be behind with your contract.

We thought when we were told this the first time that the fellow who told us was decidedly off, but because we had never seen transplanting, except when the plants were about 8 inches high, and we tried it on the seedlings and lost them all. But it was because we didn't know how.

The how is this way: wet the plants the night before transplanting is to be done. This will allow them to fill up on water enough to carry them over till they get a fresh rooting. From this stage on I have given the process in detail in "The Farmer's Advocate" of December 31, page 2245.

We used nitrate of soda to stimulate a quick growth. This comes in crystals and may be applied in two ways, by sprinkling a little of the crystals on the soil, say a teaspoonful to 18 plants after the second transplanting. Never let the soda touch the leaves, for it will destroy them. The soda will dissolve when watering the plants. It may be applied by dissolving in water and sprinkling it on, which is slower, and you must make a weak solution in order to prevent burning of the foliage, say 1 teaspoonful to a gallon of water. One application is all that is advisable.

British Columbia WALTER M. WRIGHT.

### The Dark, Dark Side Of It.

As the time is approaching to commence work in the orchard again I must say the discussions we have had on spraying and results we have had therefrom do not suit me at all. Let me give you my experience for the last four years with the different kinds of sprays. On the first year we used lime-sulphur for the first spray, and Bordeaux mixture for the second and third. The fruit was 99 per cent. clean. On the second year all three sprays were lime-sulphur, and the fruit was two-thirds clean. On the third year we used lime-sulphur and the fruit was one-half clean. On the fourth year the first spray was lime-sulphur, and the second and third Bordeaux. The results were nearly a failure on account of fungus. It should be mentioned, however, that during the first year we slaked the lime each time we filled the tank. The fourth year it was run off in a trench and measured for each tank. We are constantly hearing the bright side of farming, let us have a few facts about the other side and see if we cannot benefit by them.

Norfolk Co., Ont. ROBERT CHAMBERLAIN.

### For Forty-five Years.

Editor "The Farmer's Advocate":

I have taken the Advocate for forty-five years. I quit farming nine years ago, but I still stick to the paper and I would feel lonesome without it.

Ontario, Canada

JOHN NICHOLLS.

## When and How to Fight San José Scale.

Editor "The Farmer's Advocate":

The old adage, "A stitch in time saves nine," stands more than true in the control of that most destructive of orchard pests, San José Scale. Whereas the average scale, insect or fungous disease is content with marring fruit, destroying foliage and sapping a modicum of vitality from the tree tissues, San José, uncontrolled, makes a finished job of its depredations and kills ruthlessly. Yet there is no reason in the world why its appearance should affright the orchardist. It is easy to identify, and presents no insuperable difficulties in its control. Observation, perseverance, attention to detail, promptness, and lime-sulphur are the safeguards of the apple grower.

In spite of the fact that it is more than twenty years since the first Canadian ancestor of these little wax-covered Chinese demons stole a ride into Ontario on nursery stock; in spite of the fact that one of the yellowish-brown females no larger than a crumb can act as mother and grandmother to several million of her kind in one season, the pest has progressed no further north than a line drawn from Sarnia to Toronto, and even in the tender fruit districts which it affects as a residence, by no means all the orchards are affected. That this is the case affords evidence that in the severity of our winter lies a check to the rapid progress of the enemy, part of whose Latin name, "parvisiusus," shows the disfavor with which it is looked upon.

The fact that the climate of Ontario is not all that it should be from the point of view of the pest that has invaded the southern orchards of the Province may be cheerful news to orchardists as a body, but brings no joy to the heart of the fruit-grower who already has the scale well established on his property. He wants to know

commercial mixtures are on the market at reasonable prices, and fair results will attend their use. But the good, old-fashioned lime-sulphur has as yet met no victor. Lime-sulphur, whether home-made or sold commercially, is safe, effective and absolutely dependable. It is warranted, if used at the right strength, at the right time, to leave the trees uninjured and to kill the scale with which it comes in contact.

Some orchardists use gasoline sprayers, some the less up-to-date barrel outfit. Good work can be done with either if care be taken that the outfit is in good condition, and that the pump plungers are carefully repacked before the spraying season commences. Though there is some argument as to the most desirable form of nozzle to use, practice has shown the disc nozzle to be as reliable a form as the orchardist can desire. It should be used with a moderately coarse opening.

If the whole outfit is working well a high pressure should be obtained—a very important point in dealing with the pest under consideration. Every portion of the tree should be thoroughly drenched till the whole tree from the outermost twig to the central trunk is dripping with the mixture. Too often the twigs and the undersides of the branches are neglected. Loss of spraying material is inevitable and should cause no anxiety. The cheapest job is seldom the best.

### STRENGTH OF THE MIXTURE.

Timidity as to the effects on the tree has so far led growers to use lime-sulphur somewhat weaker than is desirable for the best results. Those who know recommend the use of slightly stronger sprays and assure us that no harm has resulted from their use. When using the commercial lime-sulphur, not more than seven gallons of water should be added to one gallon of the liquid. Strength 1.035 will perhaps best meet

all requirements, and no ill effects to the tree have been observed with strength 1.040. When the home-made mixture is used, it should always be tested as to strength by means of a hydrometer.

### TIME FOR AND NUMBER OF APPLICATIONS.

One application thoroughly applied will usually have the desired effect in the case of any but badly infested trees, but it is far safer to give two applications. Even the most expert of sprayers is liable to miss out spots unknowingly. In any case it is best to give the outer twigs a thorough re-spraying after the tree has been sprayed. The twigs are perhaps more likely to be missed out by a conscientious expert than by

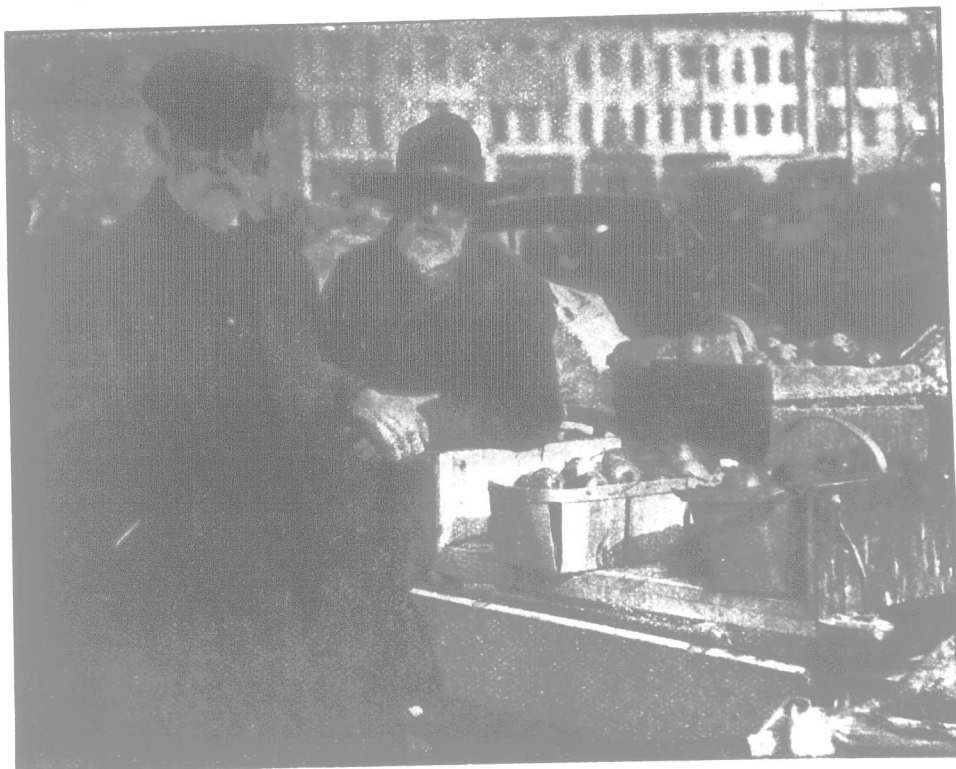
the hired man in a hurry. Excess of zeal leads to too close an approach to the tree, and though the boughs and branches may be running with the mixture, many of the twigs may remain untouched, as may the underside of the branches. When the time for picking comes the sight may be seen of a tree apparently otherwise free from scale bearing badly-infested fruit. Even when spraying of the twigs has missed none of them, their pubescence or downiness impedes the penetration of the mixture to the scales on the young bark unless considerable force and pressure are applied.

Presuming that the safer course of giving two applications is to be followed, the first spray should be applied as soon as the weather is bright and warm, as will generally be found during some portions of March. Temperatures at or below freezing point do not seem to allow of the best results, though the reason why this should be the case is as yet unknown.

The second application should be given as near as time will permit to the bursting of the buds. In many cases the buds will burst before the entire orchard has been sprayed, but this is no reason to stop spraying. Orchardists as a class are far too timorous about applying the mixture to young foliage. Until the leaves are larger than ten-cent pieces, no harm can result with the strength suggested, at least on apples.

### CAUSES OF FAILURE TO GET GOOD RESULTS.

Many conscientious fruit-growers, after reading thus far, will feel inclined to put down the paper



Two Experienced Marketers.

how to get rid of it before a few years leave his trees dry skeletons of their former beauty. The control of San José is no longer in the theoretical stage. Much practical investigation by Provincial Entomologist L. Caesar, B. S. A., and his assistants, by the Bureau of Entomology at Washington, D. C., and by various United States Experimental Stations, has given to the orchardist a simple method of effectually ridding his trees of the pest.

### PREPARATIONS FOR SPRAYING.

First and foremost to be considered is the preparation of the orchard for spraying. Old, neglected orchards are usually the worst sufferers from, and the most prolific breeding grounds for, the scale. The tall tops of old, rough trees should be headed back, dead branches removed, unnecessary boughs pruned out, the tree centres opened to the sun, and the rough bark under which the scale may breed and thrive untouched by the spray mixture, scraped off with a hoe or any other handy instrument. The tree, when pruned, should be low enough to be sprayed economically, and should have every portion open to the free application of the mixture. In younger or less-neglected orchards the above advice holds good in so far as in their case such preparation is needed. This topping, pruning and clearing should be begun not later than the end of February.

### MATERIAL AND MANNER OF SPRAYING.

Next must be considered the spray material to use, and the manner of applying it. Some good