used, and it is usually whittled from a twig that has been sawn off. It is not well to have the wax too hot, for injury to the limbs is liable in such a case. Experienced grafters usually have a piece of unmelted wax in the kettle, and the wax not so thin that it will run too easily. In waxing the stubs and scions it is well also to start in that part of the tree that will not have to be gone through while doing other parts. The top is usually the best place to start, however, if any scions are displaced they should be put into position before the wax is applied. The object in waxing is to close all the entrances to the centre of the limb, and to cover it in such a way that air and water are absolutely excluded. The top of the stub, the sides and all the raw areas should be covered with a thin layer of wax, even a little touch on the tip of the scion will prevent it drying out. Too much wax will often flake off, but care should be taken that a fairly liberal amount is put on top of the stub as some of it will run in between the scions where the split has been made on the branch. If wax covers the lower bud of the scion it will not affect the growth of the bud. When the bud starts to grow it will push out through the wax and show no ill effects.

After growth has commenced and where both scions are growing it is well to take one of them out after a year or two as one healthy scion will make a good branch, but if both are left, crowding is liable to take place and splitting occur.

It has been mentioned that two scions should be placed in each stub. There are cases with old trees where the operator desires to cut off a large branch. This is not wise in all cases, but there may be instances where he would be justified in doing so. In such a case two splits could be made, one at right angles to the other, and four scions inserted. Two of these, at least, should come out after the top of the stub has healed.

This process is known as cleft-grafting, and is perhaps the most severe on the trees of any form practiced. There are many other ways of grafting, but this is the one which has been in use for a long time, and one which has given very good success. Whip-grafting and other forms are used on smaller branches and twigs, but space will not permit of an explanation of their principles at this time. There is no secret or unnatural thing about grafting, all one should know is the principle regarding the union of the barks of the twig and stub, namely where the sap circulates through the bark. An operator is sure to accomplish this union by inserting the scion at a slant so that at one point at least the bark of the scion and stub will meet, but it is better to take pains and set the scions in a line with the branch, for danger of splitting out always exists where the scions are set in any other way.

How Onion Growers Produce a Crop.

Onion growers have, in the past, experienced years of small demand for their product, but taking one year with another the demand has corresponded very well with the supply, and prices have been such that favorable revenues have been received from this department of the garden or farm work. The time approaches for another season's work, and where onions are to be grown preparations should be made for them as soon as possible.

While a rich, loamy soil is preferable for onions, large and remunerative crops have been grown on land that would be considered fairly heavy. In fact some of the prize-winning exhibits seen at the Horticultural Exhibition in Toronto came from fields that would not be recommended by experts as first-class onion fields. Large yields have also been obtained from mucky soils that have been fairly well drained. In fact, there is little land that is not suitable for onion growing, yet the deep, loamy, friable soil is preferred.

The preparation for a crop of onions should commence in the fall. Following a hoed crop is a good rotation for the onion field, and it should be plowed in the fall that the frost may work upon the soil and improve its texture, and that cultivation may commence early in the spring. After all has been said there is no fertilizer superior to barnyard manure for onions. Twenty-five loads per acre should be applied and worked consistently into the soil, as the onion field must be fine in texture and free of straw, clods or lumps. Most of the cultivating is done with a small hand cultivator, and any obstacle to this small implement will hinder successful cultivation and probably destroy some of the plants. After discing and harrowing thoroughly in the spring one should go over it with a fine tooth cultivator several times to be sure that the very best tilth possible has been obtained. As soon as the land is suitable to work in the spring it should be prepared for planting. From the 10th of April to the 10th of May is a suitable time for sowing the seed, and there are few localities where a later date would be advisable. Most growers favor a thick seeding. Four or five pounds per acre will suffice, and that means that in one foot of the row there will be about 18 seeds dropped. The hand drill is suitable for this work where the operations are not too extensive and it should be tried out on a clean floor or paper to see that the seeds are dropped regularly and sufficiently thick.

Too much emphasis cannot be placed upon the quality of the seed sown. It is wisdom to test the seed, and see that its germination does not fall below 88 or 90 per cent. Most of the scallions or "thick necks" are the result of poorly selected seed, which means they have been grown from poor bulbs or late-maturing onions. Success to a very large extent depends upon the quality of the seed used. Of the common varieties grown Yellow Globe Danvers is a favorite. Others are Prizetaker, Red Wethersfield, Southport Red Globe and Southport Yellow Globe.

The standard distance apart for rows is 14 inches. In some cases we have seen them 12 inches apart, while others place the rows as far apart as 16 inches. This is a matter for individual decision, as the make of the cultivator to be used will govern to some extent the distance apart the rows should be placed. It is not an uncommon practice to roll the furrow or

A Field of Onions in Middlesex County, Ontario.

to tramp it with the foot and then run the cultivator between the rows, while this rolled mark is still in evidence. As soon as the young plants mark the furrows another cultivation should take place, and should be repeated at least every two weeks until the field has been cultivated four or five times. Weeding must be practiced incessantly, and at the second weeding the plants should be thinned out. Growers do not always agree as to the distance apart plants should be left. Onions have a tendency to grow to the surface and spread out in the row, consequently they may be left fairly thick and still produce a good crop of marketable onions. From 1½ to 2 inches is the prevailing distance where good sized bulbs are desired, but 2 inches is not too far to insure a good sample. In many instances they are left closer, and after the stand has established itself a coating of fertilizer rich in nitrogen, such as hen manure, is spread over the soil which tends to develop the crop to its fullest extent. Nitrate of soda, as a commercial fertilizer would serve the same purpose. Cultivation and weeding must be practiced incessantly throughout the season, but the number of times will depend upon the quality of the soil and its freedom from weeds.

After the onions have developed very well some growers have made the practice of running over them with a light roller and breaking down the tops. They claim this prevents scallions or "thick necks," and hastens the filling of the bulb. They do not all agree, however, as to this practice, and some claim that the operation of rolling will not prevent scallions, that it breaks down the tops and hastens maturity before the bulbs are thoroughly developed.

The cultural operations do not cover all the work necessary in growing and marketing a field of onions. When the harvesting time approaches they are pulled and thrown into rows. Sometimes a cultivator with a blade beneath is pushed along, loosening the onions and pulling them out of the ground. They are thrown four rows into one, and left four or five days to dry, depending upon the weather and climatic conditions. After this they are topped and thrown into bushel crates or bags, and stored in such a way that the rain is excluded but so the air may have free circulation. In many cases they are retained in this condition until frost is expected, or until they are marketed.

ONION SETS.

The production of onion sets is similar in some respects to the growth of market onions. The land is prepared in the same way, but, generally speaking, more skill is required to grow onion sets than to grow onions for the usual market demand. A set which is more than ¾ of an inch in diameter is not very desirable. It is too large for a set, and too small for general use. A quantity of such onions are consumed for pickling purposes, but the demand for that commodity is limited. Therefore, pains should be taken to grow the onions thickly, and thus have them small in size. An onion set the size of a pea is just as good as one ½ inch in diameter. Preparation for the ordinary field crop of onions will answer very well for the production of sets. The land should be very fertile, and the rows marked off in the usual manner. The one important factor in securing sets is to sow the seed very thickly, and not so early as for ordinary onions. From 30 to 50 pounds of seed per acre are required to give the desired result, and it is best when sowing with the drill to go over the rows three or four times to insure a more even distribution of the seed. Where only a few are required they may be sown with a small can not more than two inches across. A number of holes should be punched in the top, and so small that more than two seeds will not go through the hole at one time. By shaking the can along the open row an even distribution of seed should result. The seed should be covered with fine soil from one-half to one inch in depth, depending upon the soil. A light covering for heavy soil and a deeper covering for light soil is the principle involved here. The subsequent field culture is similar to that for market onions.

The varieties used for growing sets are Yellow Danvers, Yellow Dutch or Strasburg, Australian Brown, Silverskin, Extra Early Red, and Red Wethersfield.

When harvest time comes the sets are pulled, thrown into rows and left till the tops and loose skins will rub off when going through the cleaning machine. Then they are stored in trays for the winter and kept free of frost. In other districts the tops are wrenched off when the sets are pulled and the crop is put into trays to dry before going to the cleaner.

The Italian Tomato.

A commercial report on the Italian tomato industry has been published by the United States Bureau of Foreign and Domestic Commerce, under the title "Canned Tomato Industry in Italy." The report says that while America (South) gave the tomato to the world, Italy by example, is today teaching the rest of the world how it should be raised and preserved. It is claimed that Italian tomatoes have practically pushed the American product out of the English market, and have gained also an enormous market in the United States. The total value of tomato exports from Italy is said to be well over $6,000,000 yearly. Skins and seeds that were formerly wasted are now utilized, the former as stock food and the latter as a source of oil suitable for soap-making and for lamps, and when refined is said to be edible.

In this connection it will be of interest to know that several varieties of Italian tomatoes are under trial by members of "The Farmer's Advocate" staff. During 1913 a report was noticed in the published records of the International Institute of Agriculture with headquarters in Italy, giving information regarding the outstanding merit of certain tomatoes grown there. A small supply of seed of four of the best available sorts (two large and two small, the latter for making conserve or for drying) were secured by a Canadian then engaged in entomological research near Naples. These were carefully tried last year under farm garden conditions in Middlesex County, and gave very gratifying results. The smaller sorts were a bright red in color and resembled the small egg or plum tomato, being enormously productive. The two large varieties proved remarkably promising for the first trial under such new and radically different conditions. They were large, very smooth, of a bright scarlet color, very "meaty" or firm-fleshed, and early. In fact on nearly all points they made a very favorable showing among the ten staple kinds in the trial. A London city tomato expert was especially pleased with one of them, because of its smoothness and weight. Another of them, a pure pink in color, exceptionally large and smooth, and ripe early, seemed especially desirable for table use. Seed was saved from some of the best fruit, and is to be further tested during the approaching season. Nowhere perhaps have tomatoes been brought to a higher degree of