

perfection than among Canadian growers, and it is probable that some of the strains from Italy which has so distinguished itself in tomato culture might take a front rank among the many excellent varieties grown in this country.

Transplanting Tomatoes.

Editor "The Farmer's Advocate":

It is impossible to state the exact number of days that should transpire between the different transplantings of tomatoes, that is governed entirely by the progress of the plants. It stands to reason that if we run our green-house at 70 and 80 degrees, and my neighbor runs his at 60 and 65 degrees, and another man has a hot-bed that is 80 degrees during sunshine and 50 degrees at night, my plants will require transplanting, other things being equal, earlier than either of the others. Suppose our green-houses are the same temperature and I have used all benches up off the ground (that permits of bottom heat) and he uses no benches but grows on the ground, ours will probably be ready a day or two earlier. Again, if I have a clay soil about my plants and my neighbor's is sandy and warm, he using a good proportion of rotted manure while I use only a slight amount, he will be ahead of me every time.

Granted that soil, heat, water, light and all are the same, the thing is to get the first transplanting just as soon as the true leaves appear. No time can be set. If I use 16-inch glass and my neighbor 20 inch, he gets more light than I do and will be ahead.

I would say possibly 10 to 12 days after the seed leaves appeared for first transplanting. One of our neighbors buried his seeds much deeper than we did last season and he also packed his ground much firmer, consequently the seeds were very tardy in coming up, so if we said 20 days from seeding till first transplanting, his would have been done before they had true leaves on, which I think would not be advisable. Bury seeds deep enough (half an inch is about as deep as is advisable) and pack so that they will take 10 or 11 days to appear through the ground, and with temperature of 70 and 80 degrees, that is 70 at night and 80 in the day, 10 days more should put on the first true leaves.

The thing to be aimed at in transplanting is, get in before the roots crowd, only experience can teach that. The roots grow faster than the tops do, especially after the first transplanting. As soon as the plants show any inclination to slow down in stem growth, it is generally an indication that they have used up the available nourishment in the soil and need moving.

Variety has also a good deal to do with it. For instance, Langden's Adirondack is a rank vine and a thicker, light, green leaf than Stoke's Bonny Best. This is due to some extent to the fact that Bonny Best is later maturing and hence its roots do not grow fast, while the Langden's mature the stem quicker and consequently develop more roots with which to do it. The only rule we go by is, watch the growth. When the plants stop, if they have been well cared for it is an indication that they need new soil and transplanting.

One other thing should be decided, that is how often will it pay to transplant. Each must figure that for himself. We like four times, and doubt if it pays here to do it oftener.

B. C.

WALTER M. WRIGHT.

Grafting Wild Trees to Transplant.

Editor "The Farmer's Advocate":

As you drive along the highway this time of year about the only living objects you see outside the fences are some scrubby hawthorns and wild apple trees. These are the Ishmaels of horticulture, fed on the uncertain nutriment of the roadside, and scandalized in summer by the scattering dust. Did you ever conceive the notion of taking half a dozen of them into your orchard and giving the outcasts a good bringing up? Suppose you decide on such a course this winter when you grow tired of the tedious days. Suppose you introduce six of them into a respectable sphere of existence through the medium of root grafting. Now is the proper time. I doubt if provincial, county or township authorities will seek to enjoin you from ridding the highway margins of encumbrances and adding to the fruit output of your province. I know one orchardist who thus this spring is going to fill up the valuable space from which Lombard plums, hopelessly preyed upon by black knot, were wrested.

You had best do your grafting on the outcasts where their lot has placed them. For your landable project may not perchance be kindly received by the Ishmaels. In a word the grafts may not grow, and in that case you will have been saved the bother, when spring comes, of digging them up and transplanting them to the places designed for them in the orchard. If, however, the work is carefully done at least four out of six should be successful.

Certain things besides careful workmanship are

essential to success in this endeavor. The chief of these are: Trees between 1½ inches and 3 inches in diameter on which to graft; a supply of unblemished scions; a sharp narrow-blade draw-knife or similar tool; a graft-tool, for which a ¾ chisel will do as a substitute; a sharp hand saw, preferably one of the smaller sizes; grafting wax (the formula and directions for which will follow; and stakes to fence in the foster-children from injury.

To make grafting wax for six trees (a pair of scions to each tree) the following small purchases will have to be made: One-half pound lump of beeswax, 2 ounces resin, and 5 tablespoonfuls of linseed oil.

The grafting wax is prepared as follows: Powder the resin and put it in a dish on the fire. Keep it well stirred; when the resin is thoroughly melted put in the beeswax, broken into small fragments, and stir until the dual mixture is complete. Then pour in the linseed oil, stir a few moments and remove the dish from the fire. Pour the contents at once into a pail full of cold water and work with the hands, as you would putty, until the wax becomes tough and elastic. It is then ready for use, but will become unworkable if exposed in the frosty air.

Scions can be secured from any perfect tree of the species desired. From a healthy outer branch cut twigs slightly bigger than a common lead pencil, and containing from four to seven buds. Twigs with sub-branches should be avoided, as they are likely to require too much nourishment during the precarious first season. Plain straight twigs are best. With a sharp jackknife cut these in well-mated pairs, the ends for insertion to be cut in the shape of a slim wedge, slightly one-sided, with the bark left intact on the narrow edges, the exposed ends should slant in one direction. The sooner the scions are set after cutting the better. The bark must not shrivel up.

The next step is the actual grafting. Trees of the proper size should be carefully sawn horizontally within 3 inches of the soil line. With your draw-knife or butcher-knife and chisel-mallet split the stump down the center sufficiently to make room for the prepared ends of your scions. Hold this split apart by forcing your graft iron or mason chisel vertically into it at the center. Then gently crowd your scions into the split at the outer edges, the extended edge of the scion end outward, and being careful that the bark of the stump and that of the scion are exactly in contact and not injured. Remove your graft iron and crowd your wax, of an easily workable consistency, in around the exposed surfaces, high in the center to throw off moisture. Wrap strips of heavy cloth around this and fence in the job with a stockade of stakes.

The scions that take will give positive evidence of it at sap-moving time. When you can dig up the successful stumps by the roots and transport them into the places prepared in your orchard. They can be set a trifle lower in the ground than in their birthplace in order that the wood and bark of the grafting may finally extend underground, and thus a possible, dangerous discrepancy in growth between the wild and the tame be avoided.

Trees sprung from such origin are frequently far more successful than seedlings. Once started there is always a superabundance of nourishment rising up from the mature root system.

Perth Co., Ont.

JAS. A. McCracken.

Importance of Good Seed.

Editor "The Farmer's Advocate":

Considering that one ounce of celery seed should produce 3,000 plants, and one ounce of cauliflower produce 1,500 plants, and that the crops from these if properly grown would each be worth \$75, the importance of securing the best seed of a good strain cannot be over-estimated. If one has to pay \$3 to \$4 an ounce for cauliflower seed he knows to be good, it is better to do so than run the risk of losing a part of the crop from the purchase of cheap seed. What is true of these crops is equally true of all grain and vegetable crops, and expense in the purchase of seed is a small consideration as compared with the value of the resultant crops.

Sherbrooke Co., Que.

G. C. HAY.

Forcing Pansies.

Editor "The Farmer's Advocate":

The earliest spring flowers always seem to be the best, and if you wish to have some pansies, early, make a frame with four boards of a size to suit a hot-bed sash or outside window off the house, and when the snow is nearly all gone place this over the pansy bed and bank up the outside with manure. The pansies that were under the snow during the winter can be made to bloom a month ahead of their natural time in this way.

Lanark Co., Ont. THOS. SOMERTON, JR.

POULTRY.

Brooders and Brooding.

Since the article appeared in a recent issue of "The Farmer's Advocate" on incubating chickens we have had some correspondence regarding brooders, especially home-made brooders. As a general thing we believe it is not the best practice to attempt to make brooders at home, however, where all things are handy and the man in charge is a fairly good mechanic he may be able to save a little by making his own brooder, but as previously stated, for the general farmer poultry-keeper it is more advisable to purchase one of the brooders advertised by the manufacturers and which will, if properly run, give good results.

For the farmer who does not bring out a large number of chickens it is possible to raise these with hens, provided he does not wish to go to the extra expense and trouble of purchasing and operating a brooder. In fact, some people have more difficulty in brooding the chickens than they do in hatching them, and for these it is good practice to attempt to raise the chickens with hens. Where this is to be practiced it may take some time to get the hens to own the young chickens. Prof. Graham, in his bulletin on farm poultry, states that the best method he knows is to give the broody hens one or two fertile eggs from the incubator on the 18th or 19th day of incubation. By this method the hens hatch the chickens, and usually will take many of those hatched in the incubator without any trouble. A good-sized hen will look after 15 chickens. Sometimes more are placed with them, but it is not the best practice to give a hen too many, especially early in the season when the weather is cold and often wet. When too many are given the hen she is likely to trample some, and some of those crowded out may get chilled. Where the chickens are to be raised by the hen it is well to take every precaution against lice, which are the bane of young chickens.

Where brooders are purchased or made do not neglect to get good machines. It is poor policy to pay a good price for an incubator and go to the trouble of hatching a brood of chickens, and then have them lost through neglect in brooding or because of an inferior brooder.

There are three methods of artificial brooding known to poultry keepers. Some use what is commonly known as the "fireless" brooder; others use individual brooders, a brooder for each clutch of chickens, each one being heated by a lamp or some such heater; and the third kind used more particularly in large poultry plants, is the hot-water system of heating to furnish heat to a number of brooding pens or compartments.

With regard to cold brooders we cannot do better than quote a paragraph from Robinson's excellent book, "Principles and Practice of Poultry Culture." "Cold brooders are small boxes, usually with a capacity of from twenty-five to fifty young chickens, in which the birds keep warm through contact and the conservation of the heat from their bodies. As commonly constructed, the sides are of wood, paper, or metal, with holes for the passage of the birds. The top is composed of one or more 'quilts' of lightly-padded cheesecloth, so adjusted that the center is depressed and the little birds nestle to it instead of crowding into the corners. In a heated room or brooder house, or elsewhere in moderate weather, these brooders may work very well, but birds in them require close attention at first, and they are not adapted to low temperatures. The fireless brooder, as developed to date, is not adapted to regular use on an extended scale. Some of the so-called fireless brooders are used with a hot-water jug or bottle for low temperatures."

Of the fireless brooder C. S. Valentine in his book "The Beginner in Poultry" has this to say: "The fireless brooder can be used by any one, probably with greater safety than any other brooding device, provided it is used in a room of moderate temperature at night, and in sheltered, sunny positions during the day, if in very early spring. Any kind of a grocery box may be the foundation. The larger the floor space the better; but if this space is large, it is better to partition off a room at one end for the sleeping apartment, while the chicks are still very small. After two weeks, or as soon as the chicks begin to prefer coolness to heat, the partition may be removed. The best cover I know consists of two sheets of soft cheesecloth, cut some inches larger than the top of the sleeping room. At its best, it may be padded with feathers; or, with cotton an inch or two thick. If padded not quite to the edges of the sleeping box, it may be dropped to any position above the chicks,—of course very close while they are tender. Thus, it allows a bit of ventilation along its edges. On an extra cold night, another cushion may be used. If this is a bit larger than the first, it may be adjusted to cut off as much ventilation as is safe. The one rule as to this is that the chicks can stand rather close air when but a few days old, but become