OF THE INCREASE OR PROPAGATION OF TREES.

ART. 1.—*Increase by Seed.*

It should be a general rule to propagate many kind of the trees by seed, although suckers are in many cases substituted for it; the pear, the apple, the plum and cherry, are the principal families of estable fruits, and are extensively cultivated as a matter of profit, and as these are of such importance, it is quite clear that the best possible manner of growing trees should be resorted to, in order to give the cultivator a due return for money and labor expended.

The greatest error in cultivating the above named varieties of trees from suckers is, that they are prone to throw out suckers from the roots of the parent tree, which acts a nurse for a while, to a numerous progeny of young offspring, which in time draw nutriment from the surrounding earth, and impoverish the parent. If these suckers are cut off from their parent roots, the number is trebled yearly and the oftener they are cut off, the more numerous they grow. Seedling trees seldom throw out suckers from their roots, and hence it is essential to grow trees by seed in order to evade a perpetual trouble, besides having more generally better crops of fruit.

The method of raising your seedlings, is to prepare a piece of ground by digging and manuring it well either in the fall or in the spring, but the spring is generally considered the best. Having the ground prepared, the seed may then be sown either in four feet beds with two feet alleys, or in drills of about six inches wide and a foot between. The latter I would recommend, for by this method the young plants will have a better chance to obtain the sun and air, and grow more stout and bushy, than when grown in a thick bed of four feet wide. The seed may be sown in depth according to the size.—Such as the apple, pear, and small kinds of seed may be sown very shallow, and lightly covered by sifting over it some fine rotten leaf mould, or other light earth, with a portion of decomposed vegetable matter incorporated with it. Peaches, plums, nuts, and large hard shelled seeds will require to be sown deeper in proportion. Such seed should be previously prepared by mixing it with earth in the fall, and keeping it in tubs or boxes during the winter, in order to soften the shells. Many kinds of berries, as mountain-ash, hawthorn and the like, may be treated in the same manner.

If the fall is the most convenient time for doing this business, there is no objection to doing it in a proper manner, and so much of the nursery business of the spring will be forwarded, when seed is sown in the fall, it should be on a piece of ground where it is not subject to be inundated or covered with water, which rots the seed in the ground, and is an almost sure cause of failure, therefore the choice of ground is of great importance.

ART. 2.—*Increase by Cuttings.*

There are many kinds of fruits which are increased by cuttings, as the grape, the currant, the gooseberry, &c. The manner of doing this, is to prepare a rich mellow ground by spreading over it a quantity of well rotted manure and digging it neatly with a plate spade; this being done, the cuttings are to be prepared by cutting them in lengths of about a foot, with a sharp knife; the ground being prepared, the cuttings may be inserted, by placing a garden line and pressing them down about half way into the ground by the side of it, when one row is completed, the ground is to be neatly raked by the side of it, and the line removed to the intended distance between the rows, when the next row may be planted in the same manner, and so continue until the whole is completed.

The selection of cuttings for this purpose, is of some importance as healthy or unhealthy trees may be produced. The cutting should be chosen from young wood of last summer's growth, and that which is strong, straight, and healthy. It should be, if possible, taken from a part of the tree where it has been well exposed, so that it is well ripened; if taken from the centre of the tree, where the shoots are thick they are oftentimes soft and succulant, and hence improper.

The choice of ground for this purpose is very important; it should, if possible, be chosen in a shady place, where the sun and air can have free influence; the soil should be of a rich loamy nature, with a portion of sand, in order that the cuttings may become callous, and root more freely.

ART. 3.—*Increase by Layers.*

Many kinds of fruit, as the currant, the gooseberry, grape, &c. are increased from their parent, by layers; this business is generally performed in the spring, although in some cases, the fall is preferred, in order to forward the busines in the spring. However, the spring is the most to be preferred, as at that time the layers strike root much more freely; besides, the business can be done much more expeditiously.

The most general method of performing this business, is to prepare the earth around the parent plant by digging and well working the ground; this done, the layers are to be chosen of young slender shoots, and if of one year's growth the better, but if of thrifty growth, two or three year's growth will do. Having selected out of the intended layers, bend them gently down to the earth's surface in an opposite direction from the part of the plant in which they grow; this done, make an incision with a sharp knife for the part that they may throw out roots.

The incision or cut is made by placing the heel of the knife to a bud, (at a distance where the shoot can be conveniently laid in the ground,) cutting the shoot about half way through, and bringing the blade upwards about an inch, with a clear cut, so as to form a tongue to the part laid in the ground, to send out roots. This done, press a spade six or eight inches in the ground, into which insert the layer with the cut part or tongue downwards, and close over the part with earth, pressing it down with the heel, and if the shoot is stiff, it may be secured in its place, by placing over it a pegged stick and pressing it deeply in the ground. When the layers are all laid, the ground may be regularly placed about them, and neatly raked or dressed off.

When many plants are desired to be thus raised, I recommend that a piece of ground for the desired kinds be purposely selected, and *stools* planted about three or four feet apart. By this mode a regular succession of layers is obtained every spring from the last year's wood, which is thrown up from the crown or centre of the stool.

I would particularly recommend this mode to be adopted for the Isabella grape vine, by which much finer plants are obtained than by cuttings or any other method in one year.

ART. 4.—*Increase by Inoculation.*

The cherry, plum, pear, and many other kinds of fruit trees, are increased by budding or inoculating. In order to the success of this method the plants to be operated upon should be grown in a thrifty state when worked, else little reward may be expected for the trouble. When it is recollected that the *bud* inserted is to be united to the *sap* in the shoots, it must be at once evident that it should be in the very best state in order to form an union; to the contrary of this, we often see trees operated upon that are old and dried up, or have no sap to feed the inserted bud; the success of such operations requires no inquiry or consideration further than that it is certain that the result will be useless, and the trees where intended to be done, the principal object should be to choose young healthy wood full of sap.

THE MODE OF INOCULATION.—Having the trees of the above healthy description, and the proper season being at hand, the business may be done in the following manner: at the proper season, when the plants to be inoculated are in a right condition, prepare for the operation by collecting healthy shoots of the summer's growth, of such kinds as are intended to be increased. When the shoots are taken from the trees, they are to be divested of their leaves, leaving a part of the forestalk to the length of half an inch; they are then to be kept damp until they are inserted, which should be as soon as possible after being separated from the tree.

There are many ways of inserting buds, but I shall confine myself to the most general, and I believe most successful method, which is performed by making an incision in the tree intended to be inoculated, in this form, T, by first cutting through the rind, in the top, in a transverse manner, holding the knife between the fore finger and thumb; the bottom incision is made by drawing the point of the knife downward an inch; the thin end of the haft is then to be applied to the top of the incision in order to part the rind from the wood, which is done by gently lifting the top and running the end of the haft downward on each side of the incision. The incision being made for the reception of the bud, the next thing to be done is to prepare the bud, by placing the scion in the left hand, between the fore finger and thumb, with the top end next to the thumb. The knife must then be taken in the right hand, and its heel placed half an inch below the bud intended to be taken off; it is then to be carefully drawn upwards half an inch above the bud, cutting it out with about half the wood and bark. This being done, the part is to be placed between the thumb and fore finger of the left hand, and the rind gently pressed back with the edge of the knife, when the wood is to be pinched between the thumb and knife and divided from the rind with the bud, which is to be inserted neatly in the incision by pressing it gently down between the bark and the wood of the tree, and bound with bass or other string, in a neat manner, beginning first at the bottom of the incision, and then continuing it to the top over and above where the cut is made.

ART. 5.—*Increase by Grafting.*

The object of grafting is to prolong any desired fine quality of fruit by uniting it to a healthy vigorous kind, which should generally be such as is grown from seed. In this manner fine kinds of the apple, pear, cherry, and plum are prolonged through many generations, which could not be by seed, for seed from the very best kinds generally returns to varieties similar to the parent crab-apple. The methods of grafting are numerous, but there are two only generally followed, namely, the cleft-graft, and the whip-graft. The former is principally practised on large trees, and indeed in the nursery department in this country; but the latter is universally practised in the nurseries of Great Britain and other European countries.

The scions selected for grafting are those of the last year's growth from the fruitful wood. Suckers from the central part are by no means to be chosen if they can be avoided. The cuttings should be taken from the tree about the beginning of March and tied in bundles, and placed into the earth in a sunny and sheltered situation. The time of grafting depends on the nature of the season, but generally the beginning of April is a good time. When the sap begins to flow freely is the best period, which can be easily ascertained.

CLEFT-GRAFTING.—Having the scions pre-