sap is fully as sweet as the maple, though, perhaps, not so abundant; when standing in the sugar bush this tree is always tapped. The shell-bark is the most rapid grower of all the *Carya* family. In planting forest trees the distance apart should be 3½ feet by 3½ feet; this gives ample room for horse culture, but if hickories are cultivated one way only, it would be best to set two feet apart in the row and 3½ between rows; the young saplings being valuable for hop poles, walking sticks and similar purposes. The young timber, when of a size to make tool handles, brings a higher price than that of any other. Hickory is used extensively for carriage building, wheel hubs, spokes, &c., for axe handles, pick handles, and for all sorts of tool handles. The best pork packers use hickory wherever it can be procured for smoking hams and bacon, for which purpose no other wood can supply the place. The nut of the shell-bark is the finest for eating. *Carya porcenia*, or pig-nut hickory, produces the toughest and most elastic timber; it is, however, of slow growth, but the tree does not require to be more than from four to six inches in diameter before it is of use. The grain is fine, the wood hard and flexible. For high, broken or rocky land there is nothing better to plant than oaks, walnut and hickory.

Of the walnut *(Juglans)* family (if the hickory is excluded, as it is sometimes classed with them), there are only two species, the black walnut, *Juglans nigra*, and the butternut, *Juglans cinerea*. The black walnut is decidedly the tree of trees, its rapid growth, the extreme beauty of its wood, and the palm-like luxuriance of its foliage, leaves little to be desired, whether we plant for shade, for ornament, for present purposes, or for posterity. This tree grows almost as quickly as the willow or the poplar. I have a number of young specimens on my place which are growing very thritly; but as I considered the walnut question of the first importance, in order that my own opinions might be strengthened, I wrote to my friend, Mr. Thos. Beal, of Lindsay, who has been engaged in rearing these trees for some time, and who has a very fine grove of them. He writes me:

"My walnut trees produced fruit from six to ten years from the nut. The black walnut will grow much more rapidly than the butternut, and is a better tree; the foliage of the latter begins to fall in August, whilst that of the former retains its beautiful green color until the frost comes. I have had them grow four feet high the first year from the seed."

It will easily be seen there would be little difficulty in reproducing this valuable tree wherever and whenever it is thought desirable to do so. In its native wild state the furthest east the *J. nigra* is found is in the vicinity of Belleville, in Hastings county, but the Hon. H. G. Jolly grows these trees with success at Lotbiniere, between Three Rivers and Quebec. So that the trees are perfectly hardy in any part of Ontario, and most parts, if not all over the Province of Quebec. The trees may be found in a cultivated state in many parts of western Ontario. In the streets of Strathroy they are growing as shade trees.

The butternut is also a quick growing tree. It matures much faster than the maple or even the elm. It will produce nuts from seven to ten years from the seed. As an ornamental tree it is only a partial success, as the leaves are produced late in the spring and begin to fall in August, or early in September. Whilst in full leaf the tree has quite a handsome appearance. The branches are straight and stiff, but the ungraceful form of these is modified by the long and drooping foliage. The butternut is the best wild edible nut we have; if grown in quantites it would well repay to have a fixed lever press to crack the nuts, as they require to be set on end whilst they undergo this operation; a good solid iron bed to receive the nut, with a long handle working on a hinge, would be all that is required. In the green state, before the shell begins to harden, all the walnut family are esteemed for the delicious pickle which is made from the nuts. A beautiful brown dye is extracted from the bark, and is used for coloring cotton and woolen yarns, etc. A brown or olive green color is made from the leaves and outer covering of the nut. Gastronomists tell us no oil is equal to walnut oil for culinary purposes, and artists say it is the best for mixing paints, as it dries very quickly. In writing on the advantages of planting nut-bearing trees, perhaps I might be permitted to say that the edible walnut of Europe, *Juglans rigia*, is too tender for almost any part of Canada, unless it may be near the Rond Eau, on Lake Erie. This tree is not sufficiently hardy to stand the cold of the northern part of England. Most of the nuts are produced in Spain and southern France, but the tree thrives well in Essex, Kent and Surrey, England.

Almost all writers on the walnut and other nut-bearing trees state that the nuts should be planted where the tree is to grow, owing to the difficulty of transplanting them. Now, this is very sound advice, if one wants to grow the trees in a situation that can be wholly given up to them, which is by no means always the case. For my own satisfaction I have made several experiments to see why this advice is so invariably given. I found that when the germ bursts the nut a long, straight, bare root is projected directly down into the ground (this is not so much the case with trees produced from seeds). Very few rootlets (spongiols) are radiated from it; the root, when young, if taken up, looks as if it were a skewer thrust into the soil to keep the top from turning over. On digging up the plant at one or two years of age, it will be found a long and large tap root has been formed with few fibrous roots attached; the stem of the plant is considerably enlarged below the ground; the root sticks straight down, tapering to a fine point, making an awkward thing to handle. In removing the seedlings to their future home, this tap root is generally cut or broken with the spade, or shortened for convenience with a knife, and it is this operation which checks the natural growth of the tree. To obviate all difficulties as to future transplanting, I have found the following plan to succeed most effectually: Place the nuts in the ground, as soon as they fall from the trees, as thickly as possible (a hatful may be thrown into a hole if desired). When the seed leaves are matured, take up the plants and pinch off a small portion of the lower part of the root with the thumb nail, and set the plants with a dibble in nursery rows in finely prepared, rich earth; this will make the roots branch, and no further difficulty will be experienced in transplanting. This operation will give the plants little or no check, if expeditiously performed. This plan also succeeds well with horse chestnuts.

The chestnut *(Castanea Americana)* is also a quick growing and handsome tree; the leaf resembles the beech, but has a higher gloss on it; the young saplings are used for hoops. When the trees were plentiful the timber was employed for rail fences and shingles, as the wood splits freely and the grain is straight. The trees are now sawn into boards and made into furniture. Some years ago a cabinet maker in Detroit made a specialty of his commodities constructed from this wood; the writer has now a very pretty bed-room set of his manufacture. The wood is of light color, with a handsome grain, and very durable. I have tried several times to grow this tree from the nuts at Ottawa, but have as often failed. I fear it must be put down as not sufficiently hardy for this climate; it is indigenous over the western part of the Ontario peninsula, and no doubt its growth could be much extended by planting, as is the black walnut. The fruit is pleasant to eat when roasted, but it is not conspicuous for its size. The *Castanea japonica*, of which mention is made in the December number of the FARMER'S ADVOCATE, is said to be exceedingly promising. It comes into bearing at from four to five years of age. Some years ago it was awarded a certificate of merit by the New York Horticultural Society, as a new introduction from Japan of great value and universal interest. The tree is said to be as hardy as the American, and the nut nearly as large as the European chestnut. A cross between this and the native would probably produce valuable results.

The nuts of the old world are all of them superior to the native types on this side of the Atlantic, and it is natural to expect this would be the case, as they have been handed down from generation to generation, and cultivated for hundreds of years. The contact of domesticated animals and trees with civilization always has had a beneficial effect on the wild parents. The reason for this in the vegetable kingdom is probably because the best nuts, or nuts from the best trees, have been selected for seed, or the different climates, soils and circumstances under which they have been cultivated, have improved their products. In some instances the nuts and trees have been shifted from climate to climate, from one part of Europe to another, or from Asia to Europe; by these means in the course of centuries a better class of tree has been secured. All that has been done in the old world will have to be done here before our nuts are up to the standard required by our advanced civilization. Wild nuts do very well for wild men, but the cultivated apple is generally preferred for eating purposes to the acrid crab. Of course if the old world trees are found to suit our short, bright summers and to stand our more rigorous winters, all that requires to be done is to transfer them to our soil, but as a rule this has not been found to work well. The fruits in which we excel, such as the apple, the peach, the blackberry, the red varieties of raspberry, the black caps and the strawberry, which we now cultivate, are all improvements on wild plants native to the soil, or are produced from the seed or plants of old world varieties.

Can any one doubt whilst the labors of the