

WESTERN NURSERY PRACTICE.

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I. Location.

The chief point in choosing a location for a nursery is to secure the proper soil, and in this matter it is well to remember that all classes of fruit trees do not require the same kind of soil. In growing the apple, it is of paramount importance to plant the grafts on the best soil obtainable so that a strong healthy growth will be made high enough the first year to produce when headed back the body or trunk of your future tree. If two seasons are required for this growth, the tree is apt to be crooked when the second season's growth commenced. Old nurserymen often avoid such result by cutting the first year's growth back to the ground, if it is too weak, and allowing the extra strength of the root produced by the previous season's growth to be used in the production of this single shoot or whip; the prime object in growing apple trees for market, being to secure as large and stocky a tree as possible when it is two years old.

With peach trees such is not the case, they as a rule attain to a marketable size in one year from the bud and there is a tendency to make too large a growth and nurserymen have found it advantageous to plant the seed on rather thin soil instead of rich loam, thus checking their growth and making their wood more hard and firm. With this exception however it is generally advisable to procure as good soil as possible and it should always be deep and . Never try to grow nursery stock over underlying hardpan. The best soil is a deep, rich, nearly level unland loam.

II. Preparation of the Ground.

This is an important consideration in the success of nursery work since in taking the crop of trees from the field it is often left

in very poor condition for planting. Many times the nurseryman is forced to dig his trees when the ground is much too wet to work properly, if this is the case such ground should not be planted to trees the succeeding year but should be cropped with some plant which will allow of sufficient cultivation to bring the soil back into good tilth once more. Then before setting out the trees it is best to enlarge the water reservoir in the soil by sub-soiling the ground deeply, especially when you are putting out stock which you expect to grow in that same location for two or three years. This sub-soiling and cultivation for a year previous to planting opens the soil up to the air and destroys the tendency to sourness and inhospitality in soils so apparent in soils which have been worked when too wet and then left uncultivated until time for the next planting. If water is likely to stand on the land for any length of time it is best to use tileing, but this is seldom necessary in the west. All trash such as corn stalks, stubble or branches of trees--anything which will interfere with the thorough cultivation the following year, should be cleared off and if the ground is not rich in plant food it should be manured several years previous to the planting of the nursery stock so that the fertilizing material may become thoroughly incorporated in the soil.

III. Propagation of the Stock.

1. Apple--In nursery work the apple is propagated in two ways, by budding and by grafting.

Budding, this consists of applying a single bud, bearing little or no wood, to the surface of the growing wood of the stock. It is applied directly to the cambium layer and in nearly all cases is inserted under the bark. There are several different kinds of budding, such as prong budding, plate budding, flute budding, chip budding and

shield budding, but about the only one ever used in this country is the last named of the shield budding. This is so called on account of the shape of the bud when cut from the bud stick. The detached bud thus cut is inserted under the bark of the stock on the north or northeast side so that it will be protected as much as possible from the drying sun and winds.

In commercial practice budding is performed in the north mostly from late July until the middle of September, while in the southern States it begins in June. Generally however the apples and pears are budded earlier in the season than the peaches and plums, because the seedling stock for the latter is raised from seed planted the same year the budding is done and this necessitates waiting until late in the year for the seedlings to become large enough to bud. The seedlings for apple budding are allowed to grow for one year in the seed beds, they are then taken up in the fall and early the next spring set out in the nursery row; before doing this however the young stocks are dressed or trimmed, that is, about one-fourth of the root and top are cut off. This causes the roots to spread and induces a vigorous growth of the remaining buds. Stocks should be at least three-eighths inches in diameter. Just before the buds are set the leaves are rubbed from the base of the stock for six or eight inches above the ground; boys are generally employed to do this and also to wrap or tie the buds after they have been "placed" by the budder. The leaves should not be removed however more than two or three days in advance of the budders, since if this is done the bark is liable to set. The bud is inserted an inch or so above the ground so that in transplanting the budded tree to the orchard the crook caused by the bud may be covered up in the ground. In wet weather it is best to set the bud a trifle

higher than in dry weather so that there will be no danger of its being covered by mud and water. The buds are taken from well hardened shoots of the same season's growth and from trees of the variety it is desired to reproduce. The whole shoot is cut off and usually from one to two dozen buds may be secured from a single stick if the growth has been vigorous. The upper buds are in most cases immature and are therefore discarded by the budder. The leaves are removed but a part of the petiole or stock is left as a handle to the bud. A budded tree just beginning growth is illustrated in Plate II. Fig. 6. This shows the advantage a young budded tree has over a young graft in the matter of roots. The graft is shown in the same plate, Fig. 2.

Various styles of budding knives are in use, each man usually having a decided preference for a particular form. The one most generally used however is the one shown in Plate I. Fig. 3 except that many budders care nothing for the bone scalpel at the end of the handle. Expert budders will set two thousand buds per day, but the common workman scarcely ever puts in more than eight or twelve hundred.

The buds are examined about two weeks after they are placed and if they have taken hold properly, the strings are cut. The length of time required and the per cent of buds to "take" depends both on the weather conditions and on the variety budded, some varieties uniting with the stock much more readily than others. The average budder considers it a fair stand if over 75% of all varieties grow, but in some cases over 90% start. In the fall before the ground freezes up these buds are banked up, that is, sufficient dirt is thrown up to both sides of the row with a plow to cover them completely, this is necessary to protect them through the trying winters of our northwest.

The spring following the budding the stock is cut off just above the bud in order to throw the whole strength of the root into

the bud. All sprouts should be rubbed off the crown and the bud kept trimmed to a single stem.

The strength of a root system already a year old is thus thrown into this single bud and it develops rapidly. A two year old budded tree is shown in Plate IV, Fig. 8. This drawing also shows the manner of trimming a tree for planting. The branches are left low on the trunk and by trimming to outside buds a tendency to produce a spreading growth is encouraged.

This describes the common practice of budding and it is this method of propagation that is now used almost entirely in the eastern States, in the west however budding is replaced in apple work by the practice of grafting because it cheapens propagation and gives own rooted trees which are so much desired by northwestern fruit growers.

Grafting, this consists in inserting a cion, a twig comprising one or more buds, into a stalk which is usually a seedling root or a of one. It is classified in various ways, the two most prominent ones being as to the position and as to the method in which the cion and stock are united. With reference to position there are four general classes. 1. Root-grafting, the stock used is entirely a root. 2. Crown-grafting, the operation is performed on the crown or collar of the seedling. 3. Stem-grafting, the cion is set on the stem or trunk of the tree. 4. Top-grafting, grafting on the branches of the trees.

The majority of apples are grafted by the root-graft system, the piece root being about the only method used in western nurseries. Considerable discussion has arisen regarding the relative advantages of the whole and piece root graft. Careful experiments have proven that there is little or no difference in favor of the whole root, in fact a

whole root used as a stock is apt to defeat the advantage we claim for grafts--that of having own rooted trees which is urged as such a point in favor of grafting apples.

Stem-grafting is used very rarely and top grafting only in working over the tops of old trees.

In regard to uniting cion and stock we have many divisions, among the most important of which are --whip-graft, saddle-graft, veneer-graft, bark-graft and cleft-graft. The first is used almost entirely in root-grafting and the last in top grafting. A knife used in cleft-grafting is shown in Plate V. Fig. 9.

The grafting of fruit stocks is preformed almost entirely in the winter time. The stocks, seedlings one or two years old, are dug and stored in the fall and packed away in moss or leaves; about January or February grafting is begun. The knife used differs little from the budding knife except in the shape of the point. The most practical kind is shown in Plate I. Fig. 2. In piece root-grafting the seedling is usually cut in from two to four pieces, each piece being about three or four inches long. The cions in western nurseries are cut six or eight inches long so that the graft may be planted deeply in order to insure the production of cion roots. The cion and piece of root are put together as shown in Plate II. Fig. 4 and wrapped with waxed strings or waxed bands of cloth. The material used should be strong enough to draw the parts into close contact and hold them securely, yet weak enough so that it may be broken readily with the hands while wrapping. The trimming of the roots and the wrapping of the union is usually done by boys who thereby aid materially in the speed of grafting and make the whole process cheaper.

The grafts are packed away in sand, moss or saw-dust in a cool cellar, and left until spring when, if the proper conditions are main-

tained, the two parts will be found firmly closed together. If the cellar is allowed to become too warm the cions will begin growth and the grafts will be ruined. It is possible with proper attention to storage conditions and with careful treatment in planting to discard altogether the trimming of grafts, but this is a hazardous proposition and most nurserymen find it cheaper in the end to pay the cost of tying the grafts. The cellar where the grafts are stored should be well ventilated so that the grafts will not heat or rot. These grafts are set out the following spring in soil which has been very thoroughly worked and is in the best condition possible. A marker which places the rows three and one-half feet apart is run over the ground and the grafts are set in these marks with a dibble, a good workman putting in about five thousand grafts in a day. The two styles of dibbles used in this way are shown in Plate V. Fig. 10 and 11. Fig. 10 shows the one best adapted to setting out grafts. The ground is kept in the very best possible condition, by frequent cultivations and if the season and soil are reasonably good, the grafts should make a growth of from three to four feet the first season.

2. Pear and Quince--These are propagated in exactly the same manner as the apple and are generally worked on apple roots but in some cases the quince root is used especially where dwarf stock is desired.

3. Peach and Plum-- These two fruits, although important, are on account of their similarity of treatment, included under one heading. It is customary in all nurseries to propagate these fruits exclusively by budding since they work easily and seedlings of sufficient size for use of stocks can be grown in one season from the pit. The peach seedling is used as a stock for the plum as well as for the peach because

it is found to be a hardy root and its use obviates the difficulty of having suckers coming up from the roots of the tree as is the case when native plums are used for stocks.

The pits are planted in rows about three and one-half feet apart and two inches apart in the rows and covered lightly about two or three inches deep. The process of freezing and thawing during the winter breaks open the shell and the pit is ready to begin growth immediately in the spring when the ground warms up. Then if the young plant is urged along by the end of June they will be large enough to bud. The process and treatment of the buds are the same as that described under the apple. The growth of the plum is so rapid and tender that they require to be protected from our winds by fastening them to wires extending between stakes driven down in the row.

Many of the stronger growing varieties attain an average height of over five feet in a single season and caliper sufficient to make them fully as saleable as the apple is when two or even three years old.

4. Cherry-- The cherry is propagated largely by budding and the stock used is to a large extent the French or Mahaleb cherry but this in western nurseries is one of the most difficult trees to start. The Mahaleb stocks are always purchased one year old, planted out in the spring and budded during the following summer. Owing to the indifferent success with the cherry buds in this climate however, it has become the custom of most nurserymen to ship the majority of their cherry trees in from Alabama and other southeastern nurseries where the climate and conditions are such that they may be grown more cheaply.

5. Small Fruit-- In order to start small fruit successfully every nursery should possess at least a small greenhouse as nearly all of

these plants have their beginning in cuttings.

The gooseberry, current and grape are all three started in the same manner from hard wood cuttings. These cuttings are made in the fall or early winter and stored away preferably in a cool cellar in sand or sawdust and allowed to remain quiet until spring. This allows a callous to form and although the roots do not start from the callous they appear to form roots more readily if the callous has already formed. The cuttings are made six to eight inches long from wood of the present season's growth but this length is not arbitrary since it is more important, especially in the grape to cut according to the buds; each cutting should have at least two buds and since roots start better from the nodes than elsewhere the bud should be near the base of the cutting. If it so happens that the cuttings are obtained late in the winter, the production of the callous is hastened by burying the cuttings bottom end up and covering the butts of the cuttings with about two inches of sand. If this is done early in the spring then by May the callous will have been formed and the cuttings may be set out in the proper way. When no greenhouses are available, and only outdoor treatment is given, the cuttings will not make very much growth the first year and it is a mistake to sell plants one year from cuttings. If allowed to grow for two years they will develop strong root systems and this is the general custom among nurseries.

Blackberries are started from root cuttings and from suckers. The root cuttings are made by digging up the roots of an old plant and cutting them in pieces about three inches long, these pieces are then planted in a shallow trench in a horizontal position, otherwise treated like ordinary cuttings. The suckers are separated from the parent plant in the spring before growth commences and set out as other plants

are.

The raspberry and dewberry are started most easily by layering the tips. The dewberry runners take root naturally and need little care but the raspberry needs binding over and covering at the tip. These shoots if taken from the stem and grown one year in the nursery row will become strong healthy plants. The red raspberry is also propagated by means of shoots.

Strawberry propagation is a very simple matter. Strong healthy plants are set out in the spring and the formation of runners encouraged through the summer by frequent cultivations, then the next spring the new plants formed by the grounding of these runners are taken up sorted and tied in bundles ready for the market.

6. Forest Trees-- This is naturally divided into two parts; the production of trees to be sold when a year old for use in groves and windbreaks, and those older ones which are sold for shade trees. The seeds of many forest trees are enclosed by a bony shell or shuck which, being almost impervious to moisture, prevents the germination of the seed until it has been cracked or burst open by some force. It hastens the germination of such seeds to admit them to the action of the frost and this is accomplished in two ways; either by planting the seeds in the fall, or by stratifying them in boxes of sand over winter and planting them in the spring. Most nurseries adapt the first named method because it is less trouble. The seeds are planted very closely in rows just far enough apart to admit of cultivation. When it is necessary to hasten their germination as in the case of late planting, they are soaked for a time in warm water and this if the weather conditions are favorable is all right but if it should become very dry after they have thus been germinated the whole planting is liable to

be lost.

White pine seed soaked in water at a temperature of 130° for twenty-four hours will sprout at once if they have retained their vitality and are going to grow at all. Locust seed must be soaked for three days but it is well to remember that care must be taken in sowing soaked seeds. Tree seeds should be planted on good rich soil and every precaution taken to produce in them a good strong growth the first season because a difference of eight or ten inches in the height of a seedling, while not meaning much additional expense, helps greatly the sale of the trees.

Those trees intended for shade or ornamental purposes should be selected from the best of seedlings and only those reset that give promise of being straight and vigorous trees. When the trees are reset and begin growth in the spring if they are not needed to supply the trade soon it is sometimes a good policy to cut them back to a single bud so that the first year's growth will be strong and straight. The next spring these trees are looked over again and trimmed to a single stem and until large enough for sale they should be watched closely and kept trimmed so that it will not become necessary to cut off any large limbs and thus mar the smoothness of the trunk.

Evergreens require special treatment on account of their susceptibility to injury from sun and wind while young. It is the practice of a great many western nurseries to buy their evergreens, two years old of dealers who make a business of raising them alone. Even at this time when they are at just the right age to transplant from the seed bed, they must be shaded at first and this is done by setting them rather closely in beds and covering them with slatting or by building a frame up three feet or more above the trees and covering it with brush.

brush. If it is decided to raise the trees from seed it is of the utmost importance that much care be used in the selection of seed because pine and spruce seed is very easily injured after it is taken from the cone. After the seed has once been obtained it is sown in shallow drills three inches apart and about three seeds to the inch in the row. The seeds are covered with fine loam one-fourth to one-half inch deep and after this is done the whole bed is carefully shaded with slatting or brush as spoken of in transplanting. In some counties this shade is placed about six feet from the ground in order that cultivation may be carried on without moving the shade. Here however it generally consists of slatting which may be taken off in sections and rolled up and thus moved easily, this shade is usually placed about eighteen inches from the ground. Evergreens will scarcely ever make a growth of over three inches the first season and should be protected during the winter by a light covering of straw or forest litter which prevents the ground from freezing and thawing and keeps the young plants from heaving. When the seedlings are two years old they should be transplanted and given more room. Before this time it makes little difference how thick they are but from this age on they should not be allowed to crowd each other. This act of transplanting is always a benefit to a young evergreen if done properly and they are in better shape to sell if they are transplanted several times before they are five years old.

7. Ornamentals-- Western nurseries confine their stock of ornamentals usually to those hardy kinds of perennials which are easily grown and cared for without the aid of hothouses, such as the hardy roses, lilacs, berberries, flowering almond, syringas, hydrangas, spireas and in many cases the paeonys and phlox. All these except

the two last named are propagated by means of hard wood cuttings just as the current and gooseberry are. The paeony and phlox are propagated by root division. The best time to lift and divide the roots is the early fall and they can be separated into as many divisions as can be made with an eye to each piece. These roots when in a dormant condition can be shipped long distances without injury.

The rose is a trifle hard to start from cuttings and so the young plants are usually purchased of rose growers who are provided with greenhouse in which to start the young plants. Most nurseries handle asparagus as an incidental to their tree trade. The roots are obtained in abundance by sowing the seed in shallow drills in the spring these if given average care will furnish good roots for the next year's trade.

IV. Cultivation.

In western nurseries this is one of the most important items in the production of first class trees. Ordinary years, when the supply of moisture is not over plentiful, it is necessary to maintain a loose top-dressing in order to conserve the moisture and even when the rainfall is abundant frequent cultivation will tend to preserve that open condition of the soil which conduces to the greatest growth. The nursery manager must not only cultivate to destroy the weeds but also to invigorate the trees which he is growing. Grafts cuttings and seedlings need especial care and there is not much danger of giving them a superabundance of attention. The crust should be broken after every rain and in cases where it is dangerous to run close with a horse cultivator, the wheel hoes must be made use of and sometimes it is good policy to order out the old fashioned hoe and clean perfectly the rows of young stock.

V. Pruning.

The nursery must always number among its steady employees three or four men who understand definitely the art of pruning both trees and shrubbery because it is very important in the production of saleable trees to have them pruned properly. Many trees are ruined in the nursery by the indiscriminate use of the knife. In our western States especially it is important that we have lowheaded stocky trees and to secure such results the trees are treated as follows: A good heavy growth is induced by planting the graft or bud on rich soil and giving it plenty of room and thorough cultivation through the first year. Then in the spring of the second year the trees are headed back to a height of three feet or less. Soon after this the dirt is hoed away from the root and the sprouts which have started from the seedling must be trimmed off. This heading the tree off causes it to "feather out" from top to bottom. It is not good policy to rub these young sprouts off immediately as their presence will increase the diameter of the trunk. If they are allowed to remain until July or early August and are then cut off close to the trunk the wounds will heal over by fall and the tree will be much stronger.

It is the custom now to trim trees which are intended for the western trade to a height of only twelve or eighteen inches from the ground. The theory is that trees thus treated will be much more able to stand the extremes of temperature and our strong winds than one headed to a height of three or four feet. A tree trimmed back ready for planting is shown in Plate IV. Fig. 8. This drawing also represents the budded root as compared with the grafted root on the same class of tree in Plate III. Fig. 7. It is a rule in nurseries however not to trim trees when sending them out to customers unless so requested.

requested.

In trimming trees for orchard work it is the object to preserve the balance between the root and branch system of the trees and generally only enough buds are left on the side branches to induce a flow of sap and maintain the form of tree desired. Some orchardists prefer to trim their peach to a straight stick. This method has the disadvantage of causing the tree to start slowly but when it once starts the root is sure to gain foothold rapidly enough to support all the top which the tree can produce.

Small fruits and shrubbery of all kinds are cut if about two years old to about four or six inches in height above the root. This gives the root a better chance and eliminates the weaker top buds, leaving the lower ones to send out thrifty shoots the first season. Root pruning is scarcely ever necessary except in cases where the root has been bruised or mangled by the digger. A good make of pruning knife is shown in Plate I. Fig. 1, pruning shears in Plate IV. Fig. 12, a saw in Plate IV. Fig. 13 and the staff pruner used in pruning tall trees in Plate VIII. Fig. 15.

VI. Digging.

This is almost universally done in the fall so that the trees may be taken up and shipped to the customer in good season. The trees probably keep better also when heeled in properly than when exposed to the open field. The spade is very little used in digging nursery stock. The tree digger, one of common make is shown in Plate VII. Fig. 14, is used altogether because better more uniform root systems are obtained and the trees are taken out in infinitely less time and at less cost. The man controlling the digger should be one who is careful and conscientious; one who, though he will never made unnecessary work for

for the one who is pulling the trees, will yet never sacrifice the roots of a tree for the sake of his horses or the men following.

The digger if set at proper angle will cut the roots smoothly and at the same time lift them sufficiently to loosen them and make the task of pulling an easy matter. In pulling the trees the men should be cautioned not to bend the trunk of the tree too much because this straining of the fibers is liable to cause considerable injury. A sufficient force of men should be kept pulling so that the wagon may be loaded quickly when it comes to the field thus leaving the roots exposed but a short time. Enough straw must be carried on the wagon to cover the roots if the trees are to be hauled very far and all dispatch is necessary in sorting and healing in the trees after they arrive at the yard.

VII. Storing of Trees.

The trees may be stored for the winter either in a cellar or in the open ground. One of the best styles of nursery cellars is a wooden structure about three-fourths above ground with hollow walls and a roof well protected, say with tar and gravel. The important point is the facilities for ventilating both windows along the sides and flues in the roof should be provided so that a free circulation of air may be insured. Upon the dirt floor of this cellar the trees may be heeled in, standing them nearly straight up or they may be piled in tiers made up of horizontal layers of trees, the tops outward the roots of one tier pushed up against the roots of the other and the roots covered with sand as each layer is added. An alley wide enough for a man to pass through should be left between each pile and its neighbor so that that air may circulate freely. Every summer after the trees have been taken out of the cellar it should be cleaned out, all rubbish

and sand hauled off, and the cellar fumigated and left open to dry out during the summer. If treated in this manner there will be little cause for regret for having built one. The temperature in the cellar should be kept as near the freezing point as possible. A low temperature and plenty of fresh air are essential to preserve the bright healthy color of the trees until spring. Even if not troubled with fungus, a cellar kept too warm will produce a dull unnatural color in the trees which though not positively harmful still as a rule displeases the customer.

If the trees are to be heeled-in on the yard a well drained and protected place should be prepared during the summer so that it will be mellow and loose in the fall. When the trees come from the field they are sorted, a furrow is open in the ground with a spade about eight or twelve inches deep, according to the size of the trees, and generally the bed is made about ten or twelve feet wide. The roots are placed in this furrow the tops being laid down almost horizontal. The roots are then covered up with dirt taken out just ahead of them and thus another furrow is opened into which the roots of the next layer are placed and so the bed is continued, each layer being lapped over the preceding much as shingles are laid.

The different varieties are placed in different beds or separated in the same bed by a pole being laid across the top between the two kinds. The three grades are divided by being put in separate beds or by dividing from right to left in the same bed. It is important to have the soil in such condition that it will crumble into small pieces and sift in among the roots, then if it is trampled down well and the whole bed wet down with a hose when it is completed there will be little danger of any injury to the roots.

In the northwest it is necessary to protect the tops well especially of the peach trees. To do this the tops are covered with straw a layer of dirt is thrown on the straw to settle the tops down and upon this is placed another layer of straw with sufficient dirt on it to hold it in place. When thus protected the evaporation is checked, the effects of sudden changes of temperature is mitigated and the trees come out in the spring as bright and nice as they were in the fall.

It is very probable that if proper conditions of temperature and ventilation could be maintained the cellar would be the best place for storing trees but storage cellars especially if much below the ground soon engender mold or fungus which is apt to injure the whole stock so that unless prepared to build the right kind of cellar and take the proper measures to keep it sweet, it is safer to keep the larger part of your stock heeled-in on the yard.

VIII. Shipment.

Preparations for shipping usually begin by the middle of March. The straw is removed from the tops of the trees, the machinery is taken out of the packing shed, new cases are obtained, the old ones repaired, a supply of hemp string for sewing and the larger cord for tying the bales is procured and every thing is put in readiness for this the busiest season of the year. By the last of March the work of packing the different shipments is in full swing. The force is divided into three sets usually-- the runners, the balers and several men whose business it is to pack the cases. The runners should be men who are fully conversant with the arrangement of the yard as to the location of the different varieties and are also able to detect injured trees quickly, they come to the desk of the clerk and secure a bunch of labels,

usually this bunch consists of the stock ordered by one man. These labels have been written out from the office records during the winter and are fastened in these bunches to a main string in consecutive order just as they are found in the book of the clerk. Each runner has an assistant usually a boy who follows him over the yard and ties the bundles as the runner picks them out of the beds and when the list is completed they gather up their different bundles and carry them to the desk of the clerk where they are checked off, and if found correct by the book, the buyers name written on a large label is attached and the bundles turned over to the balers. Here the runners part is done so he returns to the desk, secures another bunch of labels and starts out again. A small shipment to a town is sent out in a bale, a larger one is cased, and whenever it is possible enough stock is grouped at one shipping point so that it may be sent in carload lots as this saves freight charges. It is important to have experienced balers because one who is in practice will tie up nearly twice the number of bales a novice can prepare. In baling fine straw or moss that has been dampened is mixed in among the roots as they are laid together and slough grass is fastened around the tops to keep them from becoming bruised. More straw is then packed around the roots and the whole mass of roots and straw is sewed up in burlap. In packing the cases or cars the balers are kept busy tying the trees in small compact bundles which can be handled to better advantage than loose trees.

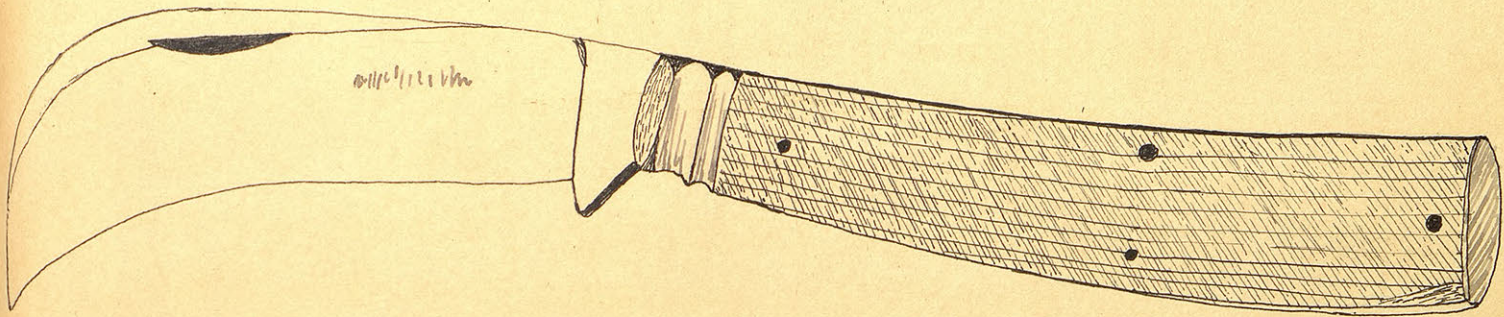
The cases are first lined with heavy building paper, straw is then put in the bottom at the ends of the case. Bundles of trees are then pressed down into the case by two men, one working from each side. The tops are placed toward the center overlapping one another and the roots at each end. Around each layer of roots is placed a sufficient quantity of moist straw to keep the roots from drying out and when the

case has been crowded as full of straw as possible more straw is placed on top, then a sheet of paper is laid over the whole top and the lid is put on and drawn into place with the casing lever shown in Plate VIII. Fig.14. When the case is filled it is weighed, the weight marked on the end, the shipping tags are tacked on securely and the case is ready for the depot.

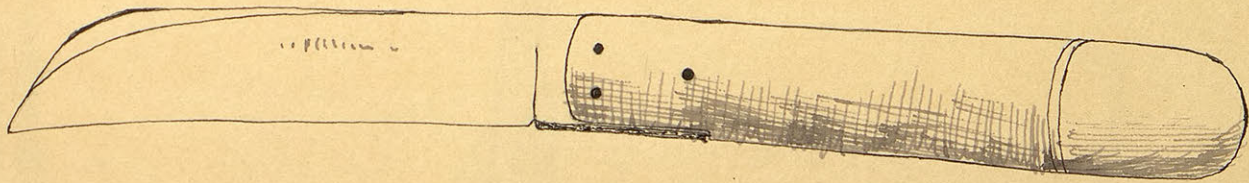
In packing a car the trees are laid in crosswise, the roots packed in straw against the sides of the car. As much help as possible should be handled during the shipping season because it is important that that the trees should be sent out as near the planting time as possible and it is very apt to cause dissatisfaction among the customers if their shipment of trees dose not reach them until late. The carefull and conscientious treatment of his customers trees during the shipping season when everything is in a rush is a strong recommendation for any nurseryman.

The unsold stock left on the yard after the spring delivery if it is young and in good condition may be reset with profit but the manager should have his sales figured out so closely that he will be compelled to reset but little stock since besides the loss in labor it is always a positive injury to trade to have the stock to be taken up and reset for the next years.

PLATE I.



1



2



3

PLATE II.

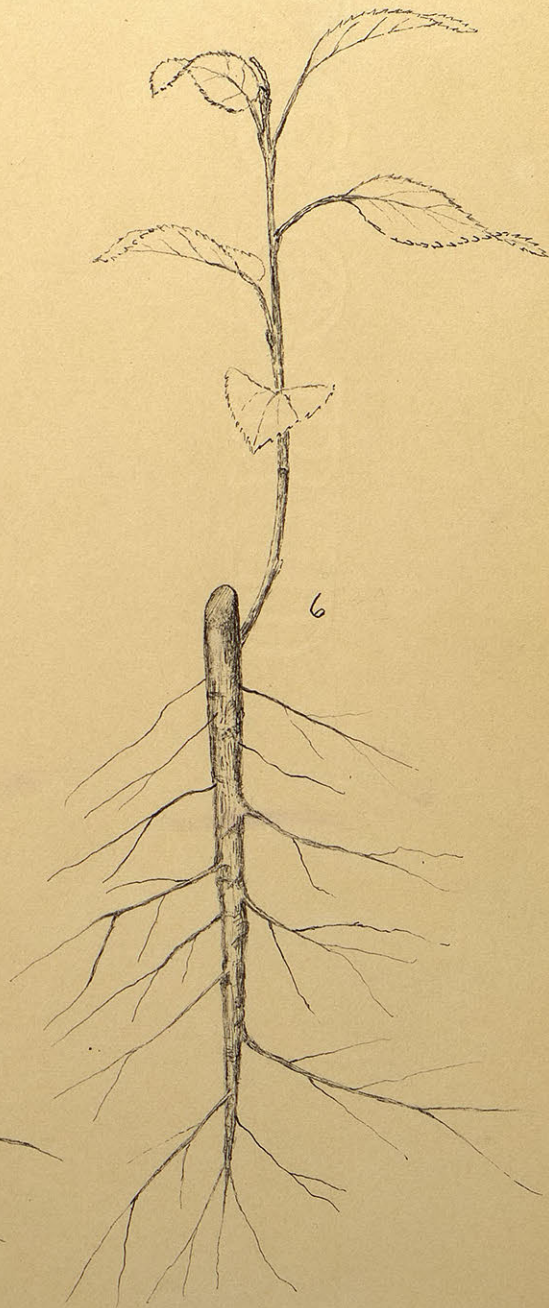
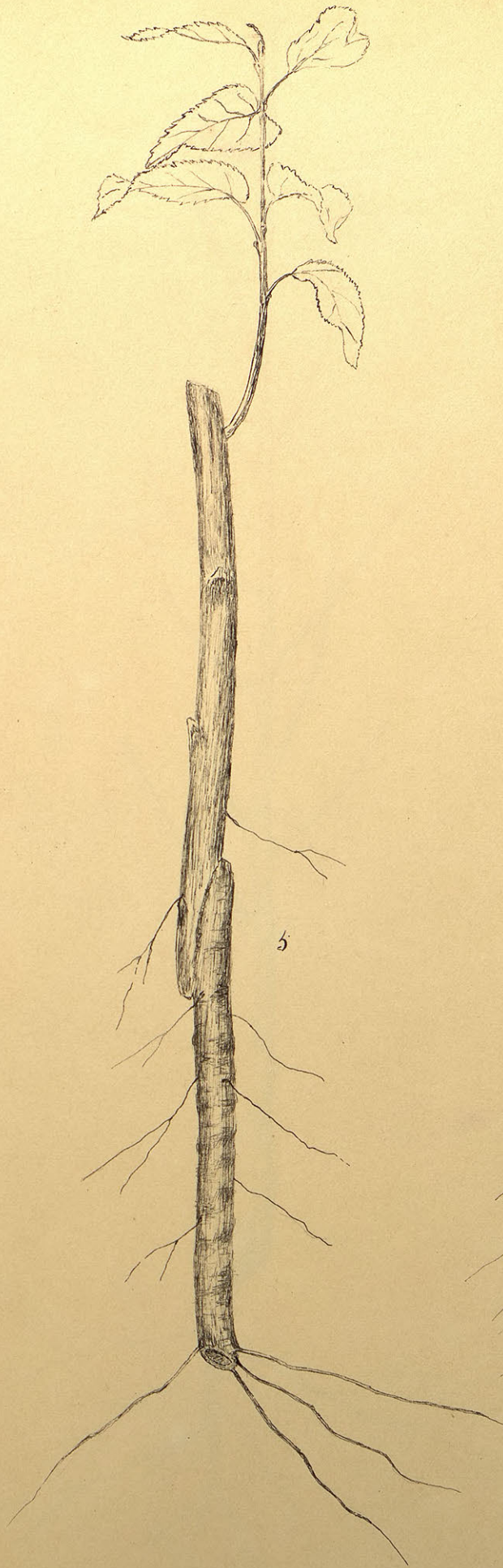
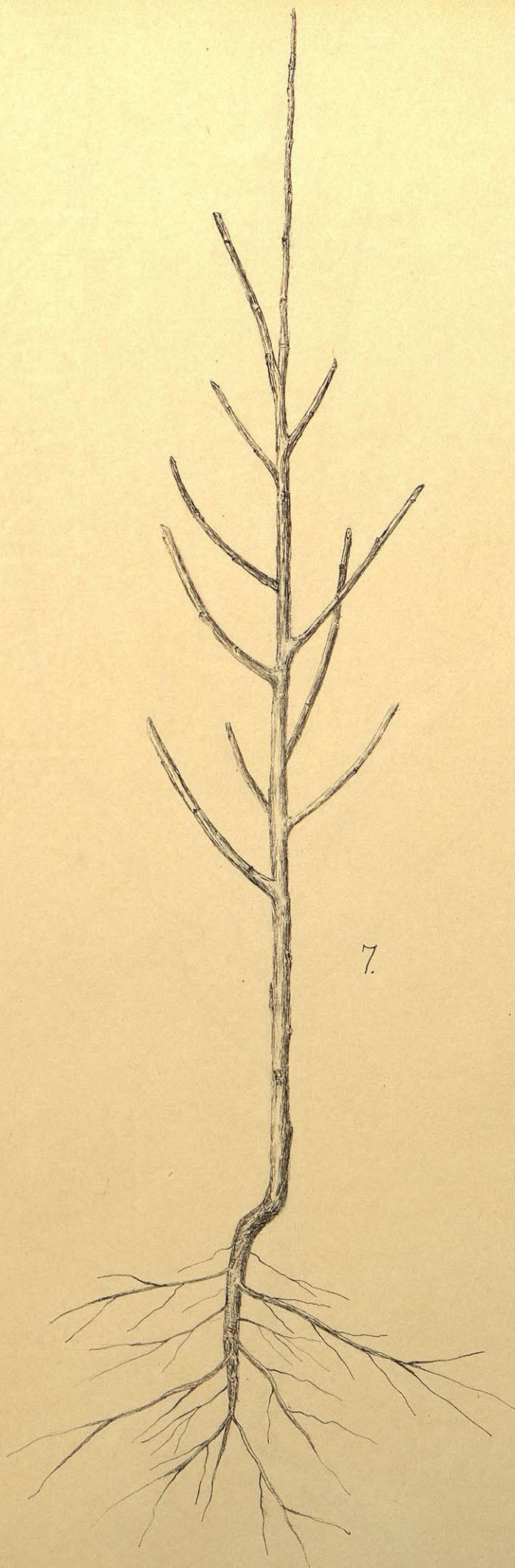


PLATE III.



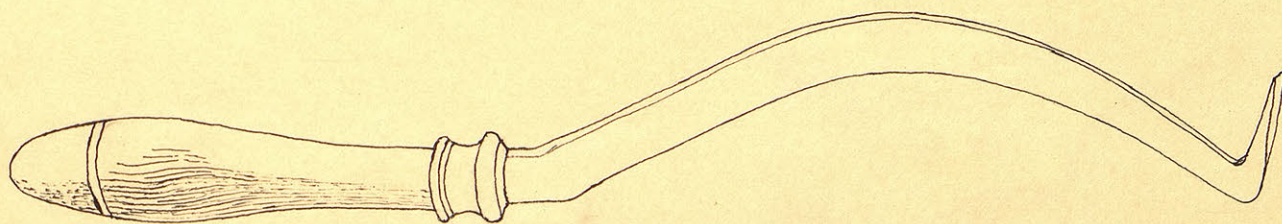
7.

PLATE IV.



8.

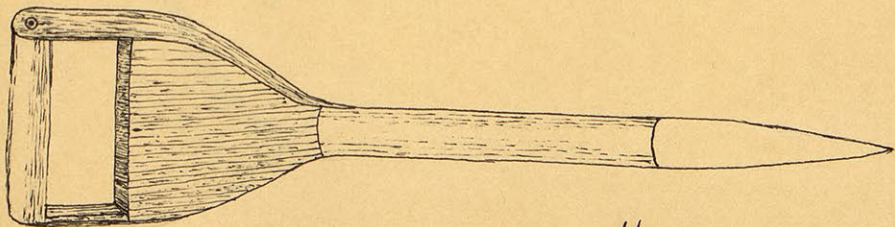
PLATE V.



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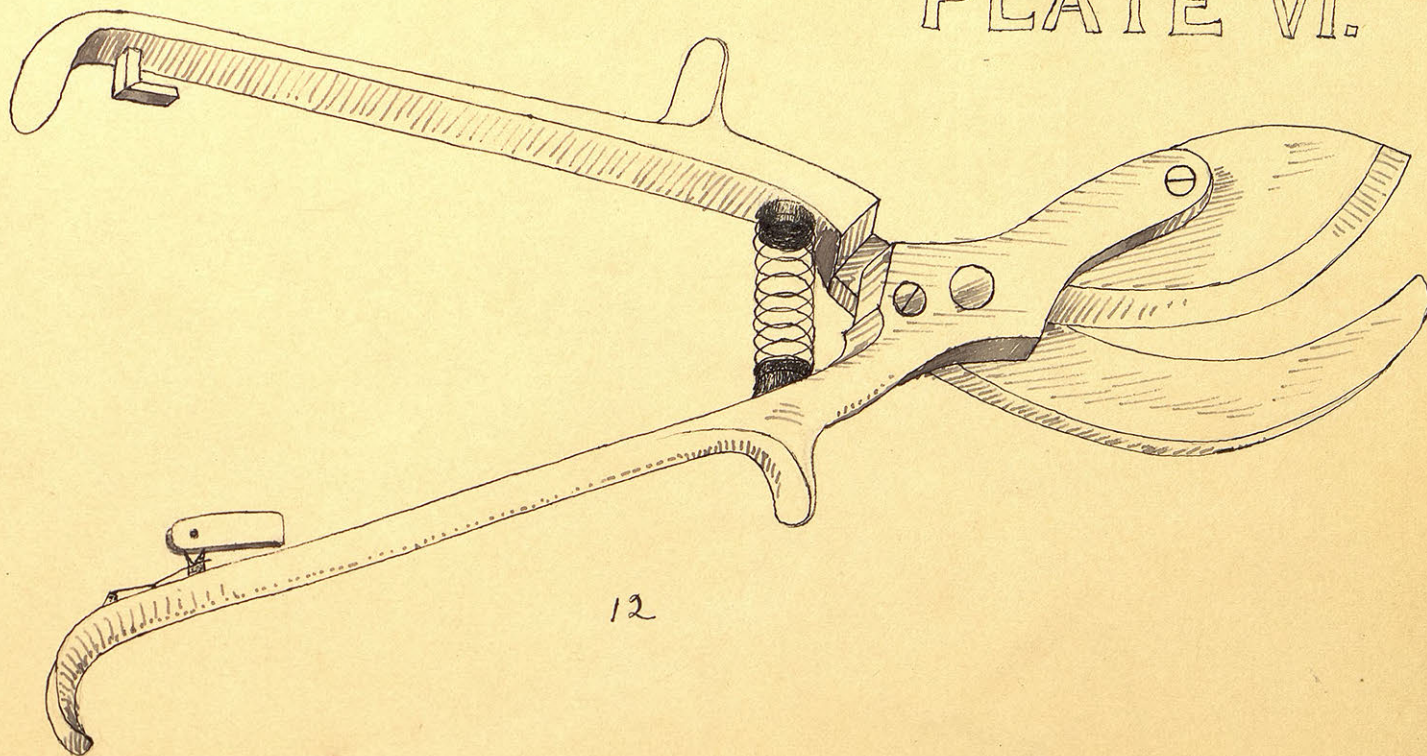


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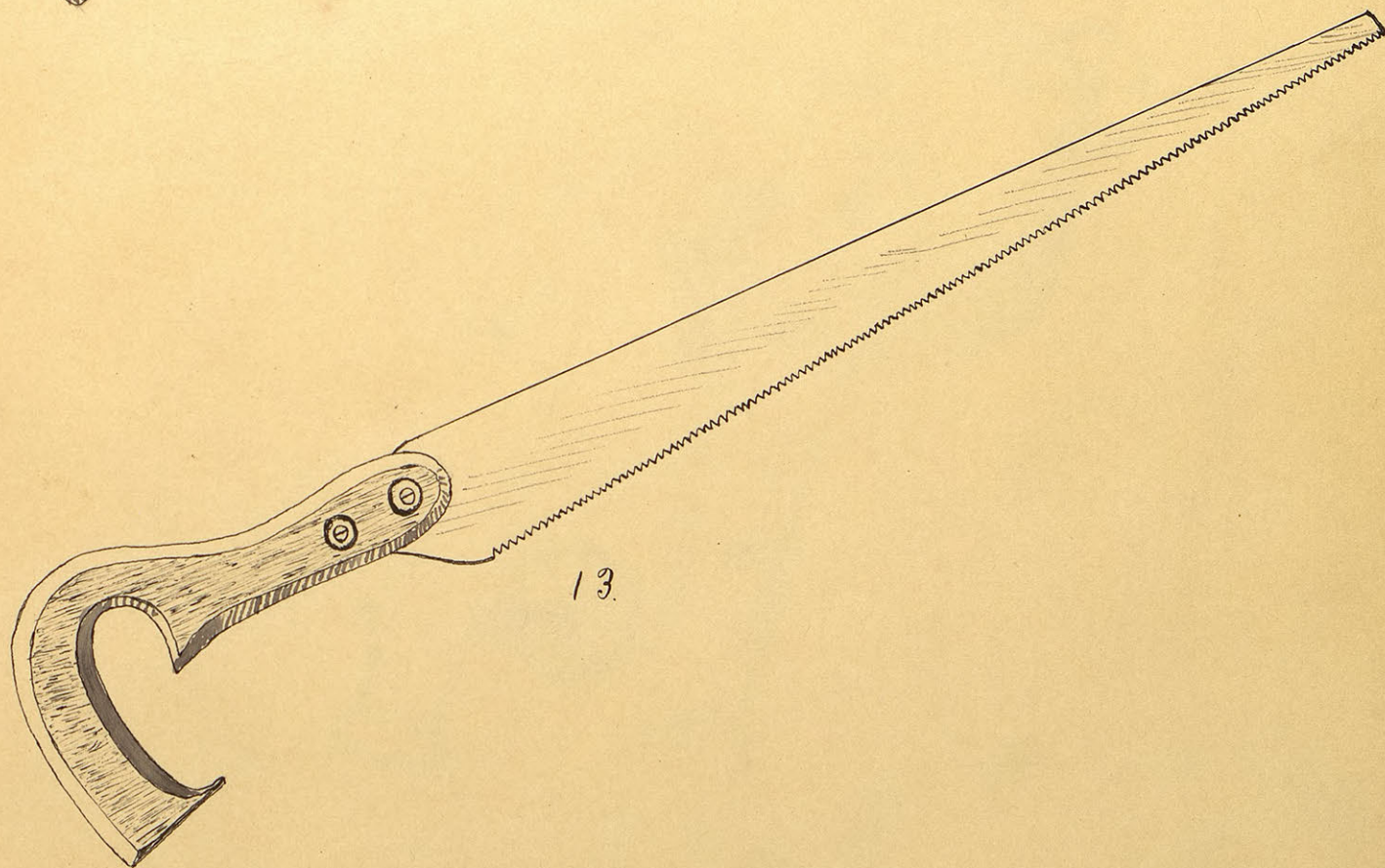


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PLATE VI.

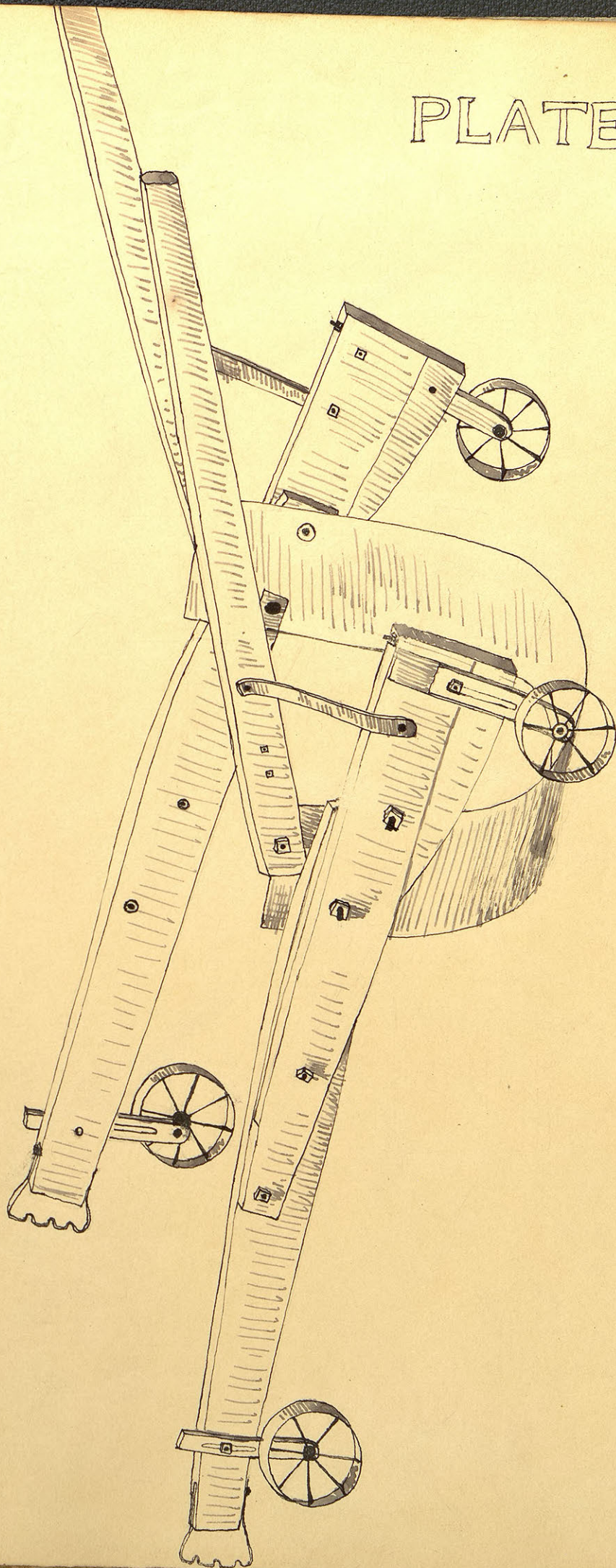


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PLATE VII.



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PLATE VIII.

