TOBACCO CULTURE.

PRACTICAL DETAILS,

FROM THE

Selection and Preparation of the Seed and the Soil,

TO

Harvesting, Curing and Marketing the Crop.

PLAIN DIRECTIONS AS GIVEN BY

FOURTEEN EXPERIENCED CULTIVATORS,

Residing in different parts of the United States, most of whom have had long practice in the growing of Tobacco.

ALSO, NOTES ON THE TOBACCO WORM.

ILLUSTRATED.

REVISED AND ENLARGED EDITION.

NEW YORK:

ORANGE JUDD COMPANY,

52 & 54 Lafayette Place.

MUSHROOMS:

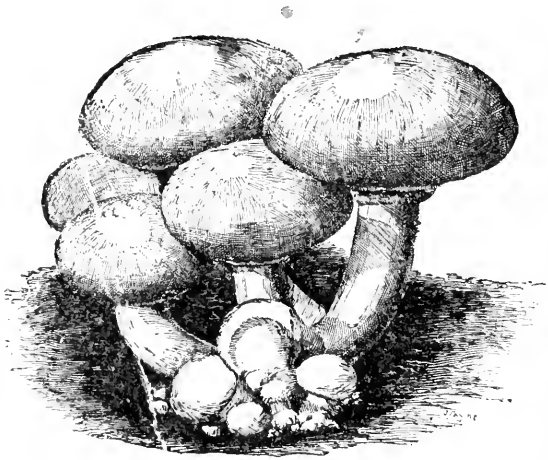
How to Grow Them.

A PRACTICAL TREATISE ON

MUSHROOM CULTURE FOR PROFIT AND PLEASURE.

By WILLIAM FALCONER.

Illustrated.



This is an eminently practical book by a practical man who is a specialist in the Cultivation of Mushrooms, and one of the most successful growers in the country. It appeals to every urban and suburban resident as well as to farmers, for any one who has an ordinary house cellar, woodshed or barn can grow Mushrooms. For home use fresh Mushrooms are a delicious, highly nutritious and wholesome delicacy; and for market they are less bulky than eggs, and, when properly handled, no crop is more remunerative.

It is the most practical work on the subject ever written, and the only book on growing Mushrooms ever published in America.

The whole subject is treated in detail, minutely and plainly, as only a practical man actively engaged in Mushroom-growing can handle it.

The author describes how he himself grows Mushrooms, also how they are grown for profit by the leading market gardeners, and for home use by the most successful private growers.

The book is amply and pointedly illustrated, with engravings drawn from nature expressly for this work.

The following condensed Table of Contents gives an idea of the scope and completeness of the work:

Cloth, 12mo. Price, postpaid, $1.00.

Address all orders to

ORANGE JUDD COMPANY, 52 & 54 Lafayette Place, NEW YORK.

TOBACCO CULTURE.

TOBACCO, ITS ORIGIN AND HISTORY.

The ordinary Tobacco, is *Nicotiana Tobacum*, a native of South America. It has been so long, and so extensively cultivated, that it has become naturalized in many localities. This is especially the case in some of the Southern States, where it springs up in waste places, and has become thoroughly established as a weed. Tobacco is remarkable for the readiness with which it is modified by the soil and climate of the locality in which it is produced. Not only are the size and texture of the leaves greatly affected, but the quality, the strength and flavor, are changed to a remarkable extent. The plant, after cultivation for a few successive years in any locality, assumes the characteristics, and becomes of the quality peculiar to the tobacco of that district. Thus the seeds of the strong Kentucky Tobacco, or the highly flavored Cuban, if it is grown for two or three years in the rich fields of the Valley of the Connecticut, yield a leaf without the strength of the Kentucky and Cuban, and with the thin substance and silky texture peculiar to the well-known Connecticut Seed-leaf. Aside from the spontaneous growth of this species, there are found in the wild state, in various parts of the country, eight or nine other species, all but one of which are regarded as indigenous. These mostly occur west of the Mississippi, especially towards the Pacific, and several are still in cultivation by the Indians. One species, *Nicotiana rustica*, is found sparingly in the older States, from New York southward, as a relic of its former cultivation by the tribes of Eastern Indians. Tobacco is produced in various countries of the Old World, and Turkish, Shiraz, and other Oriental tobaccos are well-known in commerce, and are often mentioned as being the product of *Nicotiana Chinensis*, and *N. Persica*. Whether tobacco was known to any part of the Old World before the discovery of America, is very doubtful. Those who have studied the subject most thoroughly, are inclined to regard the Oriental tobaccos as having been derived from American species. The botanical name of the genus, *Nicotiana*, was given it in honor of Jean Nicot, who is thought to have been instrumental in introducing the plant into Europe. Nicot, about the year 1560, was an ambassador from France to Portugal, and while residing at Lisbon, received seeds of the plant from Florida. The name tobacco is said by some to be from a locality in Yucatan, while others claim that it is from *tabac*, a name of the natives for the pipe they used in smoking the leaf.

THE MANUFACTURE OF TOBACCO.

Since these essays first appeared, a large number have written to the publishers, inquiring as to the preparation of the leaf to adapt it for use in smoking, chewing, etc. The manufacture of a product is an entirely separate branch of industry from that of producing the raw material, and is carried on by different persons. Instruction in the manufacture of tobacco into its various commercial forms, no more of necessity belongs to a work on tobacco culture, than do directions for brewing in a work on raising hops. The manufacture of tobacco is a trade, having its own processes, requiring peculiar machinery, and guarded by its trade secrets, each manufacturer having methods peculiar to himself.

In order to render the work as useful as possible, we give an account of the general treatment of tobacco, which is all that those engaged in the business are willing should be known. The grower of tobacco, after his crop is dried, carries it through a process of fermentation by "bulking" it, which brings it into a condition for market.

In nearly every kind of manufacture of tobacco, whether for cigars, or smoking or chewing forms, the first step is STRIPPING. The leaves are moistened, stacked, covered, and allowed to remain until they become thoroughly pliable. When they are properly softened, the "stem," as the large and prominent mid-rib of the leaf is called, is removed. This is done by a single pull, and the leaf is left in halves. Several machines have been invented for stripping, but they have not yet superseded women and children for this work. For some kinds of smoking tobacco, and for all kinds intended for chewing, the leaves are treated with what is technically known as "sauce."

THE COMPOSITION OF THE SAUCE, upon which the peculiar flavor of different brands of tobacco depends, varies with the manufacturers, each of whom has his peculiar secret. It is essentially molasses and water, or a solution of liquorice paste (Ball Liquorice), in water. Of late years glycerine has been added, which imparts sweetness, and prevents the tobacco from becoming dry. Salt is often added to the sauce, as are Oil of Anise, and other aromatics. The leaves are merely sprinkled with the sauce, and kept covered until they are thoroughly impregnated, or they are dipped into the heated liquid. Tobacco intended for cutting is placed in boxes, and submitted to pressure, which forces out the excess of liquid. The cake is then cut into shreds by a machine, several different inventions being in use. In making "plugs, or "heads," a sufficient quantity of fragments are wrapped in a leaf, the whole placed in a sheet-iron box of the proper size, and pressed into a very solid cake. One device being fed above with wads of leaves, delivers the pressed plugs continuously below. Plug tobacco is pressed very firmly into boxes or kegs, the successive layers being oiled to prevent adhesion.

Twist tobacco is made by moistening the leaves to make them pliable; a revolving hook, similar to that used in twisting straw rope, is turned by one man, while another feeds the leaves, which are laid upon a long table. The twists, thus made of leaves, are often braided together, after which they are steeped in "sauce," and pressed into kegs. The twists are also made into coils, which is called "negro head" tobacco.

SMOKING TOBACCO, in great variety, is made by cutting up different kinds and qualities of leaf. For some of the cheaper qualities, the whole leaf, including the mid-rib or stem, is cut up. Smoking tobacco is often scented, by mixing a small quantity of Cascarilla bark with it. Of late years, the more frequently employed scenting material has been "Wild Vanilla." This is the leaves of a plant abundant in Florida and lower Georgia, *Liatris odoratissima*, and is also known as "Hound's-tongue," and "Deer's-tongue." Most of the species of *Liatris*, have their pinkish-purple flowers in dense spikes, but this has them in an open panicle. The leaves are the part used; these, when fresh, have a very disagreeable odor, which in the dried leaf is changed into a fragrance similar to that of Tonka-bean, and Sweet-scented Vernal-grass. When the leaf is burned, this odor is very powerful, and but a very small quantity is used in scenting tobacco. So great is the use of this "Wild Vanilla" at home and abroad, that the gathering of it gives employment to a great many persons in the localities where it grows. Among the machines used in the manufacture of tobacco, is the Granulating Machine. This sifts out the dust, and takes out all the fragments above a certain size, leaving a coarse, uniform powder, used in making cigarettes. The stems accumulated in stripping the leaves, are consumed in preparing a sheep-dip, and to destroy plant-lice and other insects. For insects on plants, they are burned to fumigate the houses, and are also used to make an infusion to be applied to infested plants. They are sold at a low price, hardly more than sufficient to pay for baling them.

PRIZE ESSAYS.

PUBLISHERS' NOTE.—The AMERICAN AGRICULTURIST several years ago offered Prizes for the best practical essays on the Culture of Tobacco, to be written by experienced growers, and to embrace full particulars concerning the crop—all to be written out so plainly as to be serviceable to the inexperienced cultivator. Quite unexpectedly, the response was so general that *over eighty* essays were sent in from different parts of the country. These were handed over to a competent committee of three, who devoted most of their time for ten days to a careful examination of the essays. They were puzzled to decide upon the respective merits of several articles, as each writer embraced some items not referred to by others. After mature deliberation, they decided that, according to the terms of the offer, the essay first given below was entitled to the first prize; the second in order to the second prize, while the next three were so nearly equal in merit that they could not make a distinction, and they recommended an award equal to the third prize to each of these three writers. As but one of the articles could be published in the AMERICAN AGRICULTURIST, a considerable number of the best essays were selected and published in the present form. The sale of the work has been something remarkable, and though modest in its pretensions, it became the standard authority on Tobacco Culture. A book made up in this manner has an advantage over one by a single writer, as it gives the methods and details peculiar to different parts of the country. The continued demand for the work is met by a new edition, which is enlarged by a chapter giving something of the history of the Tobacco plant, and an outline of the processes employed in its manufacture.

No. I.—BY JUDSON POPENOE, OF MONTGOMERY COUNTY, OHIO.

I COMMENCED the cultivation of tobacco about fifteen years ago; I therefore write from experience, and shall try to give that experience, in a short and plain way.

VARIETIES.—I have cultivated various kinds of tobacco, but have come to the conclusion that what we call the Ohio seed-leaf is the best and most profitable kind for general cultivation. There are other kinds of tobacco that sometimes are profitable, and do well, but most of these do not cure out so well, nor color so evenly, nor are they so fine and salable as the seed-leaf. The Havana tobacco is too small and has not the fine flavor of the imported. The Connecticut seed-leaf I believe to be identical with our Ohio seed-leaf; the difference in the climate may make a slight variation in the quality, but we plant the Connecticut seed-leaf here in Ohio, and I don't think they can be told apart. The most of the tobacco raised in this district is the seed-leaf, which is strong evidence that it is the best and most profitable kind to raise here.

SEED.—At topping-time a few of the most thrifty stalks should be left to grow without topping, for seed. When the crop is cut, let the seed-stalks stand, stripping off the leaves and suckers. As soon as the seed-pods are black, the seed is matured; then cut off the seed-heads below the forks of the plant, and hang them in a dry place, out of the reach of mice, to cure. At leisure time, during the winter, strip the seed-pods from off the stalk, rub them in the hands until the seed is rubbed out, sift through a fine sifter, put in a dry place, secure from vermin of all kinds, and it is ready to sow. I have sowed seed six years old which grew as well as new seed. I think it is a good plan to raise seed enough at any time to sow for ten years, as it is thought to deteriorate by constant raising without changing. If seed snaps or pops when it is thrown on a hot stove, it will grow.

PREPARING SEED BEDS.—There are two plans of preparing beds for sowing seed; the first, and best, is to spade or plow a bed in rich, dry ground, with a southern exposure; the south end of a barn is a good place, as the reflection helps to warm the ground. Where you have tobacco-stalks, as you make a furrow with the plow or spade, fill one third full with the stalks and turn the next furrow over them, and so continue until the bed is broken up. The stalks hold moisture, make the bed warm, and help to drain it. Take well-rotted hog manure and spread over the bed, to the depth of about two inches, then harrow or rake until the manure is thoroughly mixed with the surface of the bed, and all is well pulverized, and as fine as garden mold. For a bed one rod wide and four rods long take two common-sized table-spoonfuls (as much as will lie on conveniently) of seed and mix it with four quarts of ashes, or slacked lime, and sow broadcast; the ashes will enable the seed to be sowed evenly; then take a hand-roller and roll the bed evenly, or place a board on one end of the bed, walk on it to press the ground to the seed, move it over, and repeat this until the bed is all pressed over. Another plan is to burn a large brush-heap in a clearing, or on any new ground, in the evening; in the morning dig the ground up with the ashes on; while warm, rake the bed fine and sow the seed as above directed. Very little weeding is required where the ground is burned, as the fire destroys the weed and grass-seeds.

If the weather is dry, the plants will need watering after they are sprouted, (which will be in about three weeks;) in fact, the surface of the bed should be kept constantly moist; the beds should be kept clear of weeds; do not let the weeds get a start of your plants or they will soon choke them out. If the plants grow well and evenly, the above-sized bed will plant four or

five acres, but it is always safe to have two or three such beds, to guard against a failure, and to supply your neighbors. The usual time to sow is from the middle of March to the tenth of April, or as soon as the ground admits of working in the spring. I have known seed sown in the fall make good plants, but do not recommend it.

Soil.—A rich, sandy, second bottom, I believe to be the best for raising tobacco, although our chocolate-colored uplands, when very rich and highly manured, will grow an excellent quality of tobacco, but will not yield as much to the acre. Black river-bottoms will yield more to the acre than any other kind of land, but the tobacco is not of so fine a quality; it grows larger, has coarser stems, and heavier body, and consequently, in my opinion, is not so good for wrappers or fine cut as the second bottom or upland tobacco.

Manuring and Preparing for Planting.—Tobacco is a gross feeder and grows rapidly when once started, therefore needs plenty of food to make it grow well. There should be a good coat of clover to plow under; if the ground is naturally rich, this alone will make a good crop, but hog and stable-manure, well rotted, is what the tobacco, as well as any other crop, delights in, and the more manure the better the tobacco. The plan that I am now experimenting on is, as soon as I cut my tobacco in the fall I give the ground a good harrowing, and then drill in wheat; the ground being well cultivated all the fall, is clear of weeds and mellow and needs no plowing. In the spring I sow clover, after the wheat is off; I keep the stock off until about September, to give the clover a chance to harden and spread. I then let the stock eat as low as they want to, which drives the clover to root and causes the crown to spread; I do not suffer stock to run on the clover during winter or spring; about the last of May or first of June I plow the clover under, which is now in blossom, and so I alternately keep two fields in tobacco and wheat, at the same time feeding the ground a crop of clover every two years; in this way I expect my land to increase in fertility all the time. The clover turned under makes food for the cut-worms, and they trouble the tobacco-plants but little. We now narrow thoroughly, following in the same way that we plow, to make the sod lie flat and not drag up; next the roller is put on, and after the ground is well rolled it should be again harrowed, and, if cloddy, rolled again. Make the ground in the best condition possible, so that the roots of the tobacco will have no difficulty in penetrating the soil and searching for food. My plan is to furrow east and west three feet apart, north and south three and a half feet. I plow the tobacco both ways, but do all the hoeing, suckering, etc., north and south. Some mark out the ground three feet each way, but I think it is too close. If the tobacco is large, three feet does not give room to work among it conveniently. I mark out the ground with a small one-horse plow, going east and west first, finishing the way that I make my hills. The usual way to make the hills is with the hoe, making the hill where the furrows cross each other, drawing the dirt into a hill about as large as for covering corn or potatoes. With the flat part or back of the hoe press or flatten the hill down to the level of the surface of the ground, taking care to have it clear of clods or rubbish. I generally make my hills with what we call a jumping-shovel—the frame of a single shovel-plow, made light, with a shovel about eight inches square, put on in the place of the common shovel. Hitch a steady horse to this, start him in the furrows, dip the shovel in the middle of the furrows, and raise it, depositing the dirt at the cross of the furrows. Have a hand following to level and pat down the hills, and take out clods. In this way I made, with the assistance of a boy fifteen years old, about fifteen thousand hills in a day, while with the hoe alone three or four thousand is a good day's work.

Setting out Plants.—From the first to the fifteenth of June is the proper time, although, if it is seasonable up to the fourth of July will do, but the sooner after the first of June the better. By this time, with proper care and attention, the plants are large enough. The ground should be well saturated with rain, and a cloudy day is much the best. Immediately after a rain, or between showers, call out all the force, for the work is pressing; the success of the crop depends on getting it out at the right time; all hands go to the plant-beds, pull the largest plants one at a time; don't let two stick together, or the boys will drop them together and a plant will be lost. After the baskets are full, let one hand continue to pull plants. Put the little boys and girls to dropping one plant on the side of each hill; let those who stick take an extra plant in the hand, drawing the leaves together in the left hand, and with the fore-finger of the right hand make a hole in the center of the hill deep enough to receive the full length of the roots without the top root bending up; insert the plant up to the collar with the left hand; stick the fore-finger of the right hand one or two inches from the plant, and press the dirt well up against the roots, taking care that the dirt is pressed so as to fill up the hole. Pick up the plant on the side of the hill, and as you step to the next hill arrange it for sticking; in this way you always stick the plant that you pick from one hill in the next, thereby greatly facilitating the work. Sometimes the ground is not sufficiently wet, and the sun coming on the plant is apt to injure it; at such times take a small clod and lay it on the heart of the plant to keep the sun off, removing the clod in the evening. As soon as the plants have started, the first time the ground is wet enough re-plant where they have died out.

Cultivation.—As soon as the plants have taken root and commenced to grow, begin to use a double shovel-plow, having the shovel next the tobacco, about three inches wide and six or eight inches long; do not

go too close to the hill, or you may displace the plant; follow with a hoe, removing all grass and weeds, leaving the tobacco master of the situation. Dig gently the surface of the hill, and draw a little fine dirt around the plant, and strive to keep the soil around the hill as mellow as possible without disturbing the plant. After going over in this manner, plow the opposite way, going twice in a row. Some prefer the cultivator for going over the first two times, and, I think, perhaps it would be preferable, as it pulverizes the ground better than the shovel-plow. After going over the field twice, in the above manner, commence again with the double shovel-plow, the way the tobacco was planted, following with the hoe, giving it a good hoeing as before. Use your judgment about the amount of tillage needed; keep clear of weeds; keep the ground mellow, and when the plants have spread so that they are bruised by the hoe and plow, stop cultivating.

Worms.—As soon as worms appear, which is generally when the leaves are as big as a man's hand, go over the tobacco, looking carefully at every plant. The worms usually stay on the under side of the leaf; if you see a hole in the leaf, no matter how small, raise it up and you will generally find a worm under it. Worming can not be done too carefully. Miss one or two worms on a plant, and before you are aware of it the plant is nearly eaten up. When you find a worm, take hold of it with the thumb and fore-finger, giving your thumb that peculiar twist which none but those who are practiced in it know how to do, and put the proper amount of pressure on, and my word for it you will render his wormship harmless. Worming has to be continued until the tobacco is cut; the last worming to be immediately preceding cutting and housing.

Topping.—The tobacco is ready to top when the button (as the blossom or top of the stalk is called) has put out sufficiently to be taken hold of, without injury to the top leaves. As tobacco is not regular in coming into blossom, it is the usual practice to let those stalks that blossom first, run a little beyond their time of topping, and then top all that is in button as you go. There is no particular hight to top at, but as a general thing sixteen to eighteen leaves are left; judgment is necessary to determine where to top; if topped too high, two or three of the top leaves are so small as not to amount to much; if topped low, the tobacco spreads better; if just coming out in top, reach down among the top leaves, and with thumb and fore-finger pinch the top or button off below two or three leaves, if well out in top, break off several inches down from the button and four or five leaves below it.

Suckering.—As soon as the tobacco is topped the suckers begin to grow; one shoots out from the stalk at the root of each leaf, on the upper side. When the top suckers are from three to four inches long, the suckering should be done; with the right hand take hold of the top sucker, with the left take hold of the next, close to the stalk, and break them off, and so proceed, using both hands, stooping over the stalk, taking care not to injure the leaf. Break the suckers about half-way down the stalk, the balance being too short to need removing until the second suckering. In about two weeks from topping, the tobacco is ready to cut; now give it the last worming and suckering, breaking all suckers off down to the ground, and remove every worm, if you don't want your tobacco eaten in the sheds.

Cutting and Housing.—As a general rule tobacco should be cut in about two weeks from topping, at which time the leaves assume a spotted appearance and appear to have filled up thicker; double up the leaf and press it together with thumb and finger, and, if ready to cut, the leaf where pressed will break crisp and short. Do not let your tobacco get over-ripe or it will cure up yellow and spotted; it is better to cut too soon than too late. Take a hatchet or short corn-knife, grasp the stalk with the left hand, bend it well to the left, so as to expose the lower part of the stalk, strike with the knife just at the surface of the ground, let the stalk drop over on the ground without doubling the leaves under, and leave it to wilt. The usual practice is to worm and sucker while the dew is on in the morning, and as soon as the dew is off to commence cutting. There are some who advocate cutting in the afternoon, say three o'clock; let it wilt and lie out until the dew is off next day, and take it in before the sun gets hot enough to burn it. I prefer the first plan, because a heavy dew may fall on the tobacco, and next day be cloudy, leaving the tobacco wet and unpleasant to handle. After cutting allow the tobacco to wilt long enough to make the leaves tough, so that they can be handled without tearing. Great care is now necessary to keep the tobacco from sun-burning; cutting should be commenced as soon as the dew is off, and all that is cut should be housed by eleven o'clock, unless it is cloudy; from eleven to two o'clock the direct rays of the sun on the tobacco, after it is cut, will burn the leaves in twenty minutes; after two, as a general thing, there is no danger of such burning, the sun's rays not striking direct on the tobacco. Have a wagon at hand, with stiff boards, twelve feet long, laid on the running gears; as soon as the tobacco is wilted so that it can be handled without breaking, commence loading on both sides of the wagon on the front end lapping the tobacco the same as loading fodder, keeping the buts out on both sides—build about two feet high, and so on until loaded.

Tobacco Barn.—Mine is 50 by 33 feet, with 18 feet posts; the tiers are four and a half feet apart. I hang four full tiers of tobacco, and hang between the purline plates in the comb, a half tier; the bents of the frame are 16½ feet apart. I hang on four-feet sticks made of hickory, rived one half inch by 1¼ inches, shaved and tapered at one end to receive an iron socket; I have sawed sugar-tree scantlings 16½ feet long, 3 by 4 inches thick, for the ends of the sticks to rest on and

meet in the center of the rail, 1½ inches resting on it. Some use sawed lath to hang on, but the split and shaved are far preferable. Hanging on fence-rails with twine is going out of use, as it should. I use my barn to store wheat and barley, doing the threshing just before tobacco-hanging. My barn will hang about seven acres of good tobacco.

Housing Tobacco.—The tobacco being brought to the barn, should be unloaded on a platform or bench convenient for handling. An iron socket, about 6 inches long, ⅝ by 1¼ inches at the big end, tapering to a sharp point is necessary; the sticks should be shaved so as to fit the socket as near as possible, but do not bring the stick to a sharp point, or it will not lie firmly on the rail. Have a 1½-inch hole bored three inches deep in the barn-post, three feet from the ground or floor; let the hole be bored slanting down a little, so that the socket end of the lath may be the highest; put the end of the stick that is not tapered into this hole and the socket on the lath; take hold of a stalk with the right hand, about one foot from the but end, bring it against the point of the socket, six inches from the but of the stalk, grasp the but with the left hand, and give the right hand a firm, quick jerk to start the stalk to split; then, with both hands, pull it back against the post, and so on until you have the stick full. The stalks should not be crowded on the sticks, four or five inches apart is close enough; eight or nine large stalks are enough for a four-foot stick. Having filled the stick, remove the socket, lay your stick of tobacco on the floor, and go on sticking until the load is all stuck; or it is a good plan to have rails laid on the lower tie and hang for the present as you stick. While one or two hands are hanging one load, another may be in the field bringing in another. In hanging, have a single block and half-inch rope, with a hook at one end; secure the block near where you hang, place the hook in the center of the stick of tobacco, and let the man on the floor draw it up to the one who hangs. There should be a stout pine board, two inches thick, fifteen inches wide, and long enough to reach from tie to tie; this should be placed under where you hang, to walk on. When the tobacco is hoisted up, take it off the hook, and walk to the farther end of the board; have your rails placed to receive the stick, and so continue until your rails are full, then move your board and block to another place, and so continue. A sixteen-foot rail will hang about twenty-four laths; eight inches apart is about the distance to place the laths of tobacco on the rails; if too much crowded the tobacco will house-burn. Care should be used never to let a load of tobacco lie long on the wagon or in a pile, as it sweats and heats and is soon ruined. Always keep the tobacco cool. After it is housed, keep the doors open day and night, so that it may have the benefit of the warm and dry air for the purpose of curing, closing the doors against high winds and beating rains. When cured keep the doors closed.

Stripping.—When the tobacco is sufficiently cured to strip, which will be after it has been well frozen and dried out, you will have to watch for it to get "in case" for handling; when a warm, wet, misty spell of weather comes, throw open the doors, to allow the tobacco to take the damp. When the stems of the leaves are so limber that they will not snap, and the leaves are pliable, but not too wet, take down a sufficient quantity to strip for two or three days; take it off the sticks, make a temporary crib of boards about four feet wide, and bulk the tobacco in it, laying the tops in, buts out, next the boards. After you have made your bulk, cover with an old carpet, boards, or any thing else handy, to keep it from getting too damp or from drying out. Care should be taken that the bulk does not heat; if the stalks are wet or there is any uncured tobacco, forty-eight hours is sufficient to spoil the tobacco. During the winter there are generally several tobacco seasons, and by improving them the stripping can all be done before March. Having the bulk down we now proceed to strip for market; lay a pile of the tobacco on a bench or platform about two feet high, and let the most careful and handy man take a stalk in his left hand, give it a shake to make the leaves hang out free, then pick off four or five of the bottom or ground leaves, and any badly torn or diseased leaves, and all such as are not considered *prime;* do not put any frosted or "*fat*" leaves in, as it spoils the tobacco; pass the stalk that is primed to the stripper, and let him take off the prime leaves. Take off one leaf at a time, keeping them straight in the hand; when a sufficient number are taken off to make what is called a hand of tobacco, take a leaf in the right hand, put the thumb of the left hand on the end of the leaf about one inch from the but of the hand or bunch, and pass the leaf around once or twice; an inch is wide enough for the hand; open the hand of tobacco in the center, pass the end of the leaf through and draw it tight, then squeeze the hand together and lay it down, keeping the leaves straight. An inch and a half in diameter is large enough for a hand. When a sufficient quantity is stripped to commence bulking, make two places to bulk in, one for prime and one for ground leaf; let the space be according to the quantity of tobacco to bulk. A bulk 3½ feet high and 20 feet long will hold ten boxes or about four thousand lbs. of prime tobacco; the sides of the bulk must not be inclosed, but left open, so that the buts can dry out; at each end of the bulk put a bulk-head of boards to build against, about three feet wide and four feet high; secure this upright and firm; do not build on the ground, but on a platform or floor. Commence at one end against the bulkhead, take one hand of tobacco at a time, straighten and smooth it and lay it on the floor at one side of the bulk; take another as above, press it against the first, and so proceed to lay the length of the bulk; then turn and lay down the other side of the bulk, letting the ends of the tobacco lap over the first row about four inches, and so repeat,

keeping the buts even. After one or two rounds are laid, get on the bulk on the knees, and as you lay a hand put your knee on it, and thus pack as close and compact as possible When not bulking down have boards laid on the tobacco and weights put on to keep the tobacco level. Keep the ground leaf separate from the prime

Boxing.—Boxes should be made 30 inches square by 42 inches in length outside; saw the end-boards 28 inches long, nail them to two 1¼ inch square slats so that the head will be 28 inches square; when two heads are made, nail the sides of the box to the heads so as to come even with the outside of the head, the sides being 28 inches wide; then nail the bottom on firmly; the top can be nailed slightly until after the tobacco is packed, when it can be nailed firm. Set your box by the side of the bulk, and let one hand get in the box and another pass the tobacco to him, one hand at a time, taking care not to shake it out, but put in the box as it comes from bulk, with the but of the hand next the end of the box. Place close and press with the knee firmly; lay alternate courses at each end, and if the tobacco is not long enough to lap sufficiently to fill the center, put a few hands crosswise in the center. When the box is full, place it under a lever; have a follower, which is a cover made of inch boards, nailed to two pieces of scantling and made to fit inside of the box; lay this on the tobacco, and build with blocks of scantling on it of a sufficient hight for the lever to be clear of the box when pressed. Press down firmly with a strong lever, and, while kneeing in another box full, let the lever remain, so that the tobacco gets set in the box. When ready take the lever off and fill up as before, about six inches higher than the box; press it below the top of the box, take off your lever and nail on the top as quickly as possible. Some use tobacco-presses for packing, which are perhaps more convenient; they are of various patterns, but a lever saves the expense of a press and is in the reach of all. If tobacco is sold at the shed, it should be sold before packing, being easier examined in bulk than box.

No. II.—BY W. W. W. BOWIE, PRINCE GEORGE'S CO., MD.

Seed-Beds.—A rich loam is the soil for tobacco plants. The spot for a bed should be the south side of a gentle elevation, as well protected as possible by woods or shrubbery. After a thorough burning of brush, dig deep, and continue to dig, rake, and chop until every clod, root, and stone be removed; then level and pulverize nicely with a rake. As to the variety to plant, I think the Cuba is a very good kind for our climate. The Connecticut seed-leaf is the best, but culture has more than any thing else to do with the quality. Mix one gill of seed for every ten square yards with a quart of plaster or sifted ashes, and sow it regularly in the same manner that gardeners sow small seeds, only with a heavier hand; roll with a hand-roller or tramp it with the feet. If the bed is sown early, it ought to be covered with brush free from leaves; but it is not necessary to cover it after the middle of March. Tobacco-beds may be sown at any time during the winter if the ground be not too wet or frozen. The best time for sowing is from the 10th to the 20th of March, though it is safest to sow at intervals, whenever the land is in fine order for working. Never sow unless the land is in good order, for the work will be thrown away if the land be too moist or be not perfectly prepared. The beds must be kept free from grass or weeds, which must be picked out one at a time by the fingers. It is a tedious and troublesome operation, therefore you should be very careful not to use any manures on your beds which have grass or weed-seeds in them. After the plants are up, they should receive a slight top-dressing of manure once a week, sown broadcast by the hand. This manure should be composed of half a bushel of unleached ashes, (or one bushel of burnt turf,) one bushel of fresh virgin woods-earth, one gallon of plaster, half a gallon of soot, one quart of salt dissolved in two gallons of liquid from barnyard, and four pounds of pulverized sulphur, the whole well intermixed. Let a large quantity be got together early in the spring, or winter rather, and put away in barrels for use when wanted. This, and other such mixtures, have been found efficacious in arresting the ravages of the fly — both from the frequent dusting of the plants and the increased vigor which it imparts to them, thereby enabling the plant the sooner to get out of the tender state in which the fly is most destructive to it. The fly is a small black insect, somewhat like the flea, and delights in cold, dry, harsh weather, but disappears with the mild showers and hot suns of opening summer. If possible, the plants should stand in the bed from half an inch to one inch apart, and if they are too thick they must be raked when they have generally become as large as five or ten-cent pieces. The rake proper for the purpose should be a small common rake, with iron teeth three inches long, curved at the points, teeth flat, and three eighths of an inch wide, and set half an inch apart.

After-Culture. — The soil best adapted to the growth of tobacco is light, friable soil, or what is commonly called a sandy loam, not too flat, but rolling, undulating land — not liable to drown in excessive rains. New land is far better than old. Ashes are decidedly superior to any other fertilizer for tobacco. Theory and practice unite in sustaining this assertion. The land intended for tobacco should be well plowed in April, taking care to turn the turf completely un-

der, and subsoiling any portions that may be very stiff and hold to water near the surface; and let the land be well harrowed directly after breaking it up. It should then be kept clean, light, and well pulverized by occasional working with cultivators and large harrows, so as not to disturb the turf beneath the surface. When the plants are of good size for transplanting, and the ground in good order for their reception, the land, or so much as can be planted in a "season," should be "scraped," which is done by running parallel furrows, with a small seeding-plow, two and a half feet apart, and then crossing these again at right angles, preserving the same distance, which leaves the ground divided in checks or squares of two and a half or three feet each way. The hoes are then put to work and the hill is formed by drawing the two front angles of the square into the hollow or middle, and then smoothed on top and patted by one blow of the hoe. The furrows should be run shallow, for the hills should be low and well leveled off on the top, and, if possible, a slight depression near the center, so as to collect the water near the plant. The first fine rain thereafter, the plants should be removed from the seed-beds, and one carefully planted in each hill. A brisk man can plant from five to six thousand plants per day. The smaller or weaker hands, with baskets filled with plants, precede the *planters*, and drop the plants on the hill. In drawing the plants from the bed, and carrying them to the ground, great care should be taken not to bruise or mash them. They ought to be put in baskets or barrels, if removed in carts, so that no. many will be in a heap together. The plants should never be planted deeper than when they stood in the bed. Planting is done thus: Seize the plants dropped on the hill with the left hand; with one finger of the right hand make a hole in the center of the hill, and with the left put in the root of the plant. The dirt is well closed about the roots of the plants, (put in with the left,) by pressing the fore-finger and thumb of the right hand on each side of the plant, taking care to close the earth well about the bottom of the root. If sticks are used to plant with, they should be short, and the planter should be careful not to make the hole too deep. The plants should be very carefully planted, for if the roots are put in crooked and bent up, the plant may live but never flourish, and, perhaps, when too late to replant, it will die, and then all the labor will be wasted. In three or four days it may be weeded out, that is, the hoes are passed near the plants, and the hard crust formed on the hills pulled away, and the edges of the hill pulled down in the furrows; this is easily done if performed soon after planting, but if delayed, and the ground gets grassy, it will then be found a very troublesome operation. After weeding out, put a gill of equal parts of plaster and ashes well mixed, upon each plant. In a few days, say a week or less time, run a small plow through it, going twice in a row This is a delicate operation, and requires a steady horse and a skillful plowman, for without great care the plants will be knocked up or be killed by the working. In a week after, the tobacco cultivator or plow must be used. Either implement is valuable at this stage of the crop. But once in a row is often enough for either cultivator or shovel-plow to pass. The crop can now be made with their use by working the tobacco once a week for four or five weeks, going each time across the former working. Any grass growing near the root of the plants should be pulled out by hand. As soon as the tobacco has become too large to work without injuring the leaves by the single-tree, the hoes should pass through it, drawing a little earth to the plants when required and leveling the furrows made by the cultivator and shovel. Let this hoeing be well done, and the crop wants no more working. Care should be taken to leave the land as level as possible, for level culture is best.

Topping.— When it blossoms, the best plants ought to be selected for seed; one hundred plants being enough to save for seed to sow a crop of forty thousand pounds. All the rest should be topped before blossoming—indeed, as soon as the blossom bud is fairly formed. It should be topped down to the leaves that are six inches long, if early in the season, but if late, top still lower. If the season is favorable, in two weeks after a plant has been topped it will be fit for cutting, yet it will not suffer by standing longer in the field. From this stage of the crop, until it is in the house, it is a source of solicitude and vexation to the planter. He is fearful of storms, of frost, and worms, his worst enemy — they come in crowds, "their name is legion" — and the suckers are to be pulled off when they get three or four inches long, they spring out abundantly from the bottom of the plant or leaf where it joins the stalk. Ground leaves are those at the bottom of the plant which become dry on the stalk; gather them early in the morning, when they will not crumble.

Worms.— These ought to be pulled off and killed as fast they appear, or they will destroy the crop. Turkeys are of great assistance in destroying these insects; they eat them and kill those which they do not eat, for it seems to be a cherished amusement to them to kill worms on tobacco; they grow passionately fond of it — they kill for the love of killing. There are every year two "gluts," as they are called by planters; the first attacking the plants about the time that they are about one third or half grown, the other comes on when the tobacco is ready for cutting. The first can be easily subdued by a good supply of turkeys, and if *then* they are effectually destroyed the second glut will be very easy to manage, for it is the opinion of many intelligent and experienced planters that the greater portion of the first glut reäppears the same year, as horn-blowers, and breed myriads. When the second army of worms makes its appearance, the tobacco is so large that the turkeys do but little good. The only method, then, to destroy them, is to begin

in time. Start when they are being hatched, and keep up a strict watch upon them, going over the whole field, plant by plant, and breaking the eggs, killing such as may be seen, and by constant attention during each morning and evening to this business alone, with the whole force of the farm, they may be prevented from doing much harm. When they disappear the second time, there is no more cause of trouble.

Cutting and Housing.—When the plant begins to yellow, it is time to put it away. It is cut off close to the ground, by turning up the bottom leaves and striking with a tobacco-knife, formed of an old scythe — such knives as are often used for cutting corn. Let it lie on the ground for a short time to wilt, and then carry it to the tobacco-house, when it may be put away in three different modes, by "pegging," "spearing," and "splitting." Pegging tobacco is the neatest way and best, yet the slowest. It is done by driving pegs about six inches long and half an inch or less square into the stalk, about four inches from the big end of the stalk; and these pegs are driven in with a mallet, in a slanting direction, so as to hook on to the sticks in the house. It is then put on to a "horse," which, by a rope fixed to one corner, is pulled up in the house and there hung upon the sticks, which are regulated at proper distances. A "tobacco-horse" is nothing more than three small sticks nailed together so as to form a triangle, each side being three or feet long. Spearing is the plan I pursue; because it is neat enough and decidedly the quickest plan. A rough block, with a hole mortiсed in it, and a little fork a few inches from the hole for the tobacco-stick to rest upon, one end being in the hole and a spear on the other end of the stick, is all the apparatus required; the plant is then, with both hands, run over the spear and thus strung upon the sticks, which, when full, are taken to the house and hung up at once. There are "dart-spears," like the Indian dart, and "round spears." Either will do.

"Splitting" tobacco is admired by many who contend that it cures brighter, quicker, and is less likely to *house-burn* or injure from too thick hanging. This mode is pursued easily by simply splitting, with a knife made for the purpose, the plant from the top to within a few inches of the bottom, before it is cut down for housing. Care should be taken not to break the leaves while splitting the stalk. The knife for splitting may be fully described by saying it is a miniature spade. It can be easily made out of an old scythe-blade inserted in a cleft white oak handle, with its edges beveled off to the blade, so that it acts like a wedge to the descending knife. After the tobacco is split, cut down, and carried to the house, it is straddled across the sticks and hung up. The sticks are generally supported by forks driven in to the ground near the heap of tobacco, for greater convenience to the person putting on the plants. Tobacco-sticks are small round sticks, or are split out like lath, and are about one inch square at one end, or one and a half inches square, usually larger at one end than the other, and they should be about eight or ten inches longer than the distance between joists of the tobacco-house. As the tobacco cures they may be pushed up closer. After the house is filled, some put large fires under it, as soon as it has turned yellow, and by hot fires it is dried at once and does not change color, unless to increase the brightness; but "firing" gives it a smoky smell and taste that is not much liked by buyers. The cost of labor and loss of wood, and the risk of losing tobacco and house too, are great objections well urged against firing. The better plan is to have sufficient house-room, and hang it thin in houses not too large, which have windows and doors so as to admit light and air, and by closing them in bad weather, exclude the rain and dampness, which materially damage the tobacco, besides injuring the color of it.

Stripping.—After becoming dry and well cured the stems of the leaves being free from sap, the first mild damp spell of weather it will become pliant and may then be stripped off the stalk. It is first pulled or taken off the sticks and put in piles, then the leaves are stripped off, tied and put in bundles of about one fifth or sixth of a pound in each. The bundles are formed by wrapping a leaf around the upper part of the handful of leaves for about four inches, and tucking the end in the middle of the bundle to confine it. There ought, if the quality of the crop will permit, to be four kinds of tobacco, "*yellow*," "*bright*," "*dull*," and "*second*." When the tobacco is taken down, the "cullers" take each plant and pull off the defective leaves that are next to the big end of the stalk, and then throw the *plant* to the next person, who strips off all of the *bright* leaves (and if there are any yellow leaves, he lays them on one side until he has got enough to make a bundle) and throws the plant to the next person, who takes off all the rest, being the "*dull*;" and the respective strippers, as they get enough leaves in hand to make a bundle, throw one side for convenience' sake to bulk. Stripping never should be done in dry or harsh weather, unless the tobacco is bulked up almost as fast as stripped. The best plan is not to take down more than you can conveniently tie up in a few hours; but if the planter chooses, he may take down a large quantity and put it in large bulk, stalk and all, and cover it with tobacco-stalks, and it will keep for many days, so that no matter how the weather be, he can strip out of the bulk. However, this is a very bad and wasteful way. Tobacco should not be too moist or "*high*," as it is termed, when put in stalk bulk, or it will get warm, the leaves stick to the stalk, get a bad smell, and change color; besides, if left too long, it will rot.

Bulking and Conditioning.—To bulk tobacco requires judgment and neatness. Two logs should be laid parallel to each other, about thirty inches apart, and the space between them filled with sticks for the purpose of keeping the tobacco from the dampness of the ground. The bundles are then taken one at a

time, spread out and smoothed down, which is most conveniently done by putting it against the breast and stroking the leaves downward smooth and straight with the right hand. It is then passed, two bundles at a time, to the man bulking. He takes them and lays them down and presses them with his hands; they are laid, two at a time, in a straight line—the broad part of the bundles slightly projecting over the next two—and two rows of bundles are put in a bulk, both rows carried on together, the heads being on the outside, and the tails just lapping one over the other in regular succession. The bulk, when carried up to a convenient hight, should have a few sticks laid across to keep it in place. It must often be examined, and if getting warm it ought to be immediately changed and laid down in another bulk of less hight, and not pressed as it is laid down; this is called "wind-rowing;" being loose and open, it admits the air between the rows of bundles, hence the term. The next process in this troublesome, but beautiful crop, is to "CONDITION" it for "*packing*." The *bright*, *yellow*, and *second* tobacco will condition, but most generally in such bulks as I have just described, but it is best to hang up the *dull* as soon almost as stripped. If the bright or second do not dry thoroughly in the bulks, that should also be hung up in the house to become well dried. To properly hang up tobacco to condition, small sized sticks should be procured, and each one nicely smoothed with the drawing-knife, and kept for that purpose. After it has once been perfectly dry, either hanging up or in bulks—so dry that the heads are easily knocked off, and the shoulders of the bundles crack upon pressure like pipe-stems—it should be taken down, or if in bulks, removed, the first soft, moist spell of weather, as soon as it is soft and yielding enough, as it will become too dry to handle without crumbling or breaking, and it must be put in four or six-row bulks of any convenient length and hight, the higher the better, laid down close, so that as little of the leaves or shoulders as possible be exposed on the outside of the bulk. When completed put sticks and logs of wood, etc., on the top so as to weigh it down. Here it will keep sweet and in nice order for packing at any time, no matter what the weather be, if it was conditioned properly, it will not change a particle while in the condition-bulk.

PACKING.—Mild, soft, pleasant weather is the best to pack tobacco in the hogshead. The size of the hogsheads is fixed by law, forty inches in the head and fifty-two in the length. Almost any wood will answer to saw into hogshead stuff; the best, of course, is that which is strong but weighs light, such as gum, or beech, or birch, or poplar. No hogshead ought to weigh over one hundred pounds, and staves drawn out of red oak, or other, which make the best, but are too costly, ought not to weigh over ninety pounds.

Having got our tobacco in good order, our hogshead ready, etc., the first mild day that we can spare, we proceed to packing. Let me observe that while putting the tobacco in condition-bulks, all of the bundles that were soft or had an ill smell ought to have been laid one side to be made sweet and dry by a few hours in the sun. The same precaution must be observed while packing. In putting tobacco into the hogshead for packing, a man gets in with *shoes off*, and lays one bundle at a time in a circle, beginning in the middle, and each circle is extended until the outer circle reaches the staves of the hogshead; a single row of bundles is then laid all round the edge of the heads of the last circle, then across the hogshead in parallels with the former, always keeping the middle the highest; this is called a course. These courses are continued until the hogshead is filled. The man who packs, presses with his knees each bundle in each course, and often stands upon his feet and tramps heavily, but cautiously all round and across, so as to get in as much as possible.

This concludes the almost ceaseless round of labor that is necessary to prepare for market this important staple of our country.

No. III.—BY CHRISTIAN SCHNEIDER, MADISON COUNTY, ILL.

(*Translated by Ferdinand Schlueter.*)

INTRODUCTION.—As in other kinds of farming, the culture of tobacco varies in different localities, and every cultivator must modify the hints here given to suit his own particular soil and location. The principal thing is, to understand the nature of the plant, that is, the necessary requirements of soil, climate, and culture, and the reason *why* all the work connected with its culture is done; for this must be adapted to the end aimed at, and not only *may* be different under other circumstances, but often *must* be so. I have therefore tried to explain, why the work is done, and *how*, in my location, (Central Illinois,) I have best succeeded in growing the crop.

1. RAISING PLANTS FROM SEED.—Raising tobacco-plants from seed is somewhat similar to raising cabbage-plants, but is different in two important things: It takes considerably more time for the seed to sprout, (six weeks,) and, on account of disturbing the roots, can not well stand weeding. Therefore the principal care in providing the seed-bed is, to prepare for the early starting of the seed, and to have the bed free from all weed-seeds. In the West we prepare the seed-bed in the following manner: we take a plot of land—newly cleared land is preferred—sloping southward, and protected against winds. The bed should be four feet broad and eight feet long; on this we pile brush

wood, and heavy logs, sufficient to keep up a strong fire for at least one hour, and burn it. When the coals begin to die out, or before the soil is cold, the bed is cleared off, and only the fine ashes are left, then it is hoed thoroughly and as deep as the strongest heat has penetrated, after which it is raked cross and lengthwise, until the soil is entirely pulverized. Every thing that might hinder the growing of the plants, and their taking out afterwards, is carefully removed. On this bed a thimbleful of seed, well mixed with a few handfuls of ashes or earth, is sown broadcast, and tramped in with the feet, or slapped with the under side of the spade or any other suitable instrument. After this, the bed is thoroughly wetted with a weak manure-water, twelve pounds of hen-droppings, or one pound of soot in ten gallons of water, and lightly covered with straw. The seed-bed does not need much attention at first, if the weather remains mild; but if there is danger of night-frosts, a layer of brush must be made, and on this a layer of straw two to four inches thick, according to the degree of frost. The straw is removed in the morning, and put on again at evening, leaving it off entirely, when the nights are mild. Although the seed-bed is ready now, it must not be left to itself, and requires some care. The plants must always have sufficient moisture, and if timely rains do not fall, they must be watered with weak liquid manure as often as needed. Should weeds appear, notwithstanding all precautions, they must be removed with the utmost care. The above-mentioned quantity of seed is sufficient to raise plants for one acre.

Whoever is in possession of a hot-bed can raise the plants much easier; he can sow later and have plants earlier and with more certainty. But even the common bed may be made into a kind of hot-bed. The burned and hoed surface-soil is removed and put on one side, then one foot of fresh horse-dung is laid on the subsoil, and the surface-soil put back again. Boards may be placed around, cross-pieces laid over them, and the straw covering put on these.

The earlier the young plants are ready for transplanting the surer the tobacco crop will be. March is the latest to make the seed-bed in the open air, and June the latest for transplanting. Some time may be gained by keeping the seed in damp earth in the room, and sow it in the seed-bed just before it commences to sprout.

For seed I recommend the following varieties: 1. Connecticut seed-leaf, principally for segar-wrappers; 2. Cuba, for fillers and wrappers; 3. Maryland; 4. Virginia, the last two principally for smoking and chewing tobacco. For snuff every thing may be used, the refuse and even the stems. The Connecticut, Maryland, and Virginia yield the largest crops, the Cuba the smallest but best. The first varieties yield about one thousand pounds, the latter five hundred pounds. In very favorable seasons double the amount may be raised. All tobacco-seed, which is removed from its native clime and soil, will deteriorate, and the seed must be renewed from its native place, although the seed may, when it finds favorable soil, etc., yield just as good, if not a better variety.

To raise seed, leave the best and strongest plants for this purpose. The suckers only are removed, and the leaves left on the plant, until the seed is ripe.

2. The Soil and its Preparation.—In a suitable climate tobacco may be raised in every good cultivated soil. But what is "suitable climate"? Which are the northern and southern boundaries of its culture? We consider only the practical side of the question, and answer, Tobacco can be raised as far North as corn, and as far South as the sugar-cane. Wherever corn matures fully, tobacco will also mature, if properly cultivated. For us in the West, and for all the localities that have not an over-amount of heat, experience has proved, that a *dry, warm soil, (loam or sandy loam,) rich, deep, and containing lime*, is most suitable for tobacco. The more sandy, to a certain degree, the soil is, the better will be the quality of the tobacco; the nearer the soil is to clay, the poorer will be the crop under similar circumstances, although the yield may yet be satisfactory. Clayey soil will hardly produce tobacco suitable for segars. Wet and tough clay soils are under no circumstances suitable to tobacco.

Tobacco lands require also: 1st. Protection against winds. Where this is not done by nature, it may be artificially done by planting several rows of pole-beans a few steps apart. 2d. There must be no standing water. This is best prevented by deep plowing, by which the water will sink into the soil, where it belongs.

The land must be plowed deep, eight to twelve inches, and harrowed thoroughly until it is as fine as good garden soil. This is best done by plowing in the fall, exposing the hard and rough furrows to the frost; after the soil is dry in spring, it should be harrowed thoroughly, and then plowed and harrowed again for a second, and if necessary, for a third time, and rolled before planting. The different plowings, etc., should of course be done at intervals long enough to allow the land to settle. This is the treatment of soil that has been cultivated with the plow before tobacco is grown on it. It is somewhat different with newly turned (virgin) soil, or a clover-field, or a meadow, which the tobacco particularly likes. Deep and thorough working is the rule here also, but it is done in somewhat different way. In the virgin soil, all the roots must be picked up, because they would make the soil too loose for the secure insertion of the plant, and then they would hinder the cultivation with the hoe and the plow to a great degree. Meadows and clover-fields are broken up about three weeks before planting, eight to ten inches deep, taking care that the furrow is entirely turned, so that the grass is

brought to the bottom. After eight to fourteen days, when the soil has settled, it is thoroughly harrowed in the direction of the furrows, to prevent the sod being turned up again, which must remain below undisturbed. Shortly before planting the soil is harrowed again, and if necessary it is rolled and harrowed once more. This time it may be done crosswise. This treatment of meadows and clover fields has these advantages: the newly turned sod prevents the weeds from coming up, and the under-turned grass acts as a manure, and, if the seed-bed should fail, (which may be the case,) the work of breaking up the soil is not lost, as other crops may be raised.

"*Tobacco makes the land poor.*"—This is experienced wherever tobacco is grown, and not only individuals, but whole countries have ruined their soil with this crop so thoroughly, that it remained barren for a long time after. Whoever, therefore, cultivates this hungry plant for more than a mere plaything, must be careful that he does not exhaust his land. He must not only possess a naturally rich soil, but must have plenty of manure at his disposition, and must follow a system of rotation. The writer of this is of the opinion, that the tobacco of itself does not require much manure, if planted for the first time on otherwise good and rich soil, and that even animal manure will injure the tobacco for making segars, and for smoking; but he does believe, that for the crop following the tobacco, manuring can not be done too early, and too heavily. The manures are very different, and equally useful for the different kinds of tobacco. We may classify them as follows:

To be applied shortly before planting, and in equal quantities, for all kinds of tobacco: 1. Guano, 200 to 300 pounds on the acre; 2. Poultry-droppings, 400 to 500 pounds; 3. Green manure in any quantity; 4. Sheep-dung, 6 two-horse loads; 5. Cattle manure, 10 two-horse loads.

For chewing-tobacco and snuff: 1. Sheep-dung, 10 to 12 loads per acre; 2. Cattle manure, 20 to 30 loads; 3. Horse-dung, 15 to 25 loads; 4. Hog manure, 20 to 30 loads. The last two are useless for smoking tobacco, or for that to be used for segars.

The first three manures (guano, poultry-droppings, and green manure) must be followed after the tobacco-crop, by a plentiful supply of stable-manure. The tobacco-stalks themselves, rotted or burned to ashes, sown over the field before the transplanting, or in the planting-furrows, will act as a good manure, but are not sufficient. In highly-worked farms, that is, where the soil is valuable, and can not remain idle, it will pay every way, to sow rye for fodder on the tobacco-land in the fall; this may be made into hay, or turned under as manure at the beginning of July, just as may seem most profitable. Deep plowing for the rye, and afterward for the tobacco, must not be forgotten.

As a rotation for tobacco, I would recommend: first year, corn, potatoes, cabbage, or any hoed crop; second year, spring barley, with clover; third year, clover; fourth year, the clover plowed under at the beginning of June, and tobacco; fifth year, wheat. Nos. 1 and 4 to be manured. Or, if the richness of the clover is intended for wheat, which also pays well for this extra care, and if green rye is to be plowed under for tobacco; first and second year, as above, third, clover; the third growth plowed under, and wheat harrowed in; fourth, wheat; in the fall the field is plowed, and rye sown; fifth, green rye plowed under, and tobacco. Nos. 1 and 5 to be manured.

Or, if more wheat is desired, first, second, third, fourth and fifth years as above, and wheat the sixth year. Nos. 1 and 5, and if any way possible, No. 6 to be manured. I consider the last rotation the best. It will give, in six years, three straw-crops, which are much needed for manure. The grain-crop of barley and wheat is sure, and it don't happen as in the second, that a hoed crop follows the tobacco, which is also a hoed crop. Tobacco is planted on the same field again in seven years, an interval long enough not to ruin the soil. The benefit for tobacco in this rotation, consists in the lasting qualities of the green clover and rye, plowed under.

3. Transplanting.—As soon as the seedlings are of the size of cabbage-plants, that is, having four leaves, and being four to six inches high, they are ready for transplanting. The first thing is, to lay out the land in planting-rows with the one-horse plow, as for corn, and from north to south, if a steep slope does not make another way necessary. These rows are either furrows or ridges, according to whether there is little or much rain expected, or as the soil is porous or not. The furrows give the plants shadow, and protect the soil from drought by the sun or winds; the ridges allow all the sun, and protect from dampness. In this respect the planter must be governed by experience. Ridges and furrows may be omitted, especially in small plantations. A strong cord is stretched over the whole width of the field, by stakes at each side, and one in the middle; along this cord the plants are inserted at regular distances, which are shown by some mark on the cord. When one row is planted, the cord is removed to the next, and the planting done in the same manner, and so on, until the field is done. This method has the advantage, that the soil may be made fine with the hoe shortly before the inserting of the plant, if it has not been done sufficiently with horse-labor. However the rows may be made, they must be equally far apart, and so with the plants in the rows. The distance of the rows and of the plants depends upon the room which the plant occupies when fully grown, and is therefore different with the several varieties of tobacco. Cuba is satisfied with the smallest space, while the other varieties need more. The distance apart also depends somewhat upon the richness of the soil, for very rich soil will grow larger leaves than poor soil; and then

it must be considered whether the after-cultivation is to be done entirely by human labor, or partly by horse-power. The farthest distance for Maryland, Virginia, and Connecticut, is with the rows four feet, and the plants three feet in the row; for Cuba, the rows three feet, and the plants two feet. In Central Illinois, we do best by making the rows three and a half feet, and the plants three feet apart in the rows for the first three varieties—so we get seven thousand Cuba, and four thousand two hundred plants of the other kinds, on the acre.

It is handy in large plantations, and even necessary, when the work is to be done with horse-power, to have a wagon-road around the field and through the center, this makes the work at harvest-time much easier.

When the rows are made and the plants are large enough, then the planter must watch for a mild rain and one or two cloudy days. If the weather is favorable, he must lose no time, but go to work with all the hands at his disposal. Notwithstanding the hurry, every thing must be done methodically and in proper order; for all carelessness in transplanting tobacco is severely punished by the necessity of renewing plants that don't grow, and up to its maturity the same care must be observed, even in selling the yield. The seed-bed is thoroughly wetted, so that the roots will not be hurt while pulling up the plants, and the earth not disturbed around remaining ones. The largest plants are taken out at first, and only as many as can be planted in half a day. As soon as taken up they are tied in bundles of one hundred, laid in a basket and covered. They are inserted, not deeper than they stood in the bed, in a hole, made with the fingers or with a trowel, and the soil then squeezed around the plant again. This work is continued the whole day, in cloudy weather, until completed. But if there is no rain and no cloudy days, and the transplanting can not be postponed any longer, then the grower must water the plants at transplanting, and cover them immediately after. This requires the additional help of three workmen, namely, one who waters, one that puts dry earth around the watered plant, so that no lumps will form there, and the third to cover the plants. Transplanting under these circumstances can only be done mornings and evenings, and should even be done *only* towards evening. If the weather has been cloudy at the time of transplanting, and hot weather sets in the next or the second day, then also the plants must be covered. Covering is done with light, dry leaves or straw. After the transplanting is done, care must always be taken that the plants, until they are rooted, are not suffering from moisture, and it may be necessary that they be watered a second time. Dead or weak plants must be removed and replaced by healthy ones.

4. Work until Harvesting.—This work is done partly for the benefit of the soil and for that of the plants themselves. The working of the soil is for keeping it open to the influences of the atmosphere and to destroy the weeds, and will forward the growth of the plant, for experience has proved that only soil that is open and free of weeds will secure the full development of the plants. Loosening and stirring the soil from time to time is therefore not only beneficial, but necessary, especially when the soil is hardened by heavy rains, or a crust has formed through other influences, or when weeds appear. For the first loosening, which should be done shortly after the plants have rooted, a furrow-harrow, a one-horse harrow with teeth slanting forward and the cross-beams so arranged that they can be set two to three and a half feet apart, is the best implement; for the second and third, the cultivator, or if the soil gets hardened below the surface, or when many weeds are in their way, the common corn-plow should be used. This is the working between the rows. In the rows between the plants, where the working is even more important, it must be done with the hand-hoe. Care must always be taken not to damage the roots, and at the second and especially at the third hoeing, the soil must be drawn toward the plants, partly to protect them against storms and give them a stronger hold, and partly to absorb excessive moisture.

The soil must never be worked while wet. Where help is plenty, it is better to dispense with all horse-work; the plants can be put closer together, a larger crop is gained, less damage is done to the plants, and in closing up the account the cultivator, with human labor, will not be the loser. The working of the soil, it will be seen, is not what makes the tobacco culture so laborious and expensive. It is the *care of the plants*, of which I shall now speak.

From the first starting of the tobacco plant, it has its enemies. First appears a cut-worm that works in the soil and eats the roots off. Then comes a little caterpillar which enjoys itself on the young leaves, and lastly the beautiful and large tobacco-worm, which eats into the leaf, and in a short time leaves nothing but the leaf-stems and stalk. The only remedies against these enemies are the vigilance and industry of the planter—looking after them, digging up, picking, and destroying once or twice a day, or often as there are any traces of them. Children, to whom premiums are offered, will be very successful in destroying them. (Premiums are a very good thing all over, and are the reason why this treatise is written.) A herd of turkeys, if given access to the tobacco-field, are a very valuable help. A negro from South-Carolina told me a few days ago, that a solution of blue vitriol in water, sprinkled over the plants, will kill the worms. The remedy may be worth trying. Of course the solution must be made weak enough, so that it will not destroy the plants as well as the worms.

Priming.—The object of priming is to break off the leaves that come out too near the ground, which when large lie flat on it, and therefore rot or get dirty

This work should be done early, the sooner the better, so that the plant does not lose much strength by their growing. These leaves must *not be torn* off, especially not downward, because the plant would be injured, and instead of throwing the strength gained into the other leaves, it would be thrown away to heal the wound. The distance from the ground this priming should be done, depends upon the variety grown and upon the time at which the work is done: four to six inches is the right distance. This priming is not done by every one. One farmer may practice it, while his neighbor does not; but sorts the lower leaves separately, and sells them as so-called "lugs," for which he gets a little over half the price of the good upper leaves. Those who do not prime, must generally *top* lower, or they must risk that the whole plant, or at least the upper leaves, will not mature fully.

Topping is done to throw the strength, which would go to develop seeds, into the leaves. It must, therefore, be done as early as the seed-buds show themselves, if not earlier. This work *must* be done, and the question is, how to do it. If there are but few leaves on the plant, even these will not ripen, if it is not topped; if there are many, then the grower has the choice either to break off the flower-stalk only or to take off one or more leaves also. This should be done in answer to the questions: 1st. Is there time enough to ripen even the upper leaves fully? and, 2d, Are the plant and the soil strong enough to ripen all leaves, even the upper ones? The answers to these queries will decide the way of topping. If yes, he takes off the flower-stalk only; if no, he tops to eight, ten, twelve, fourteen, or sixteen leaves, according to his judgment, that is, he allows so many leaves to remain on the plant. Here will be seen the importance and benefit of starting the plants early from seed. This alone may increase the yield one half.

Suckering follows shortly after topping, and is done for the same reason — to concentrate the strength of the plant in the leaves. A sucker is a little branch appearing at the place where the stem of the tobacco-leaf joins the stalk. They draw off nutriment, while they will never be good for any thing, and therefore must be removed. This is one of the tiresome operations in tobacco culture, for these suckers do not all appear at the same time; they first appear on the lower leaves, and then on the middle, and lastly at the top leaves. They even push out again sometimes after they have been removed. They demand the planter's whole attention, and he has no rest on account of them, until the plant is fully matured.

Priming, topping, and suckering must not be done during a rain, or when the dew is on the plants, or they will get rust-spots, which will get larger every day and at last destroy the whole leaf.

Harvesting.—The maturity of tobacco is seen, if the leaves, which were green up to now, when held against the sun, show yellowish, reddish, or brownish spots, feel sticky, and when bent break off short and clean. Before this period sets in, the *drying-house* should be in good order. This house is built to give room for the free hanging up of the tobacco, so that it is protected from the sun, wind, and rain, and is allowed to dry by the free circulation of the air. Any building, therefore, will answer which has a good roof, boarded sides, and enough windows and air-holes (which can be closed at will) to keep up a mild circulation of air inside, and also to keep out strong and too quick drying winds. If the tobacco is grown on a large scale, the house should have large doorways to drive a wagon in and out. There must be sticks all over the house, either cross or lengthwise, and these sticks must be ready and in their places. Now the work of harvesting the crop is commenced on a clear or cloudy but not rainy day. The mature plants (those not ripe are left longer on the field if not too late in the season) are cut off near the ground, two of them tied together by the but ends and hung up in the field on riders, which rest on two forks fastened in the ground, and they are left there until evening to wilt; then they are brought to the drying-house and hung up. The tobacco is hung up on the upper sticks first, and the work continued downward; care is taken that the sticks are six to eight inches apart, also that the plants are not too near together on the sticks, because the air should have free passage among the plants, and when they touch or rub against each other, unsightly spots are produced. The sticks must be pretty wide, so that the two plants which are tied together, and one of which hangs on each side, are held well apart. Later, when the tobacco has dried off somewhat, the sticks and plants may be moved a little nearer to each other; but the plants on the upper sticks must not touch those on the lower; they should be so arranged that one lower stick is just in the middle of the space between two upper ones.

Another method of harvesting may be followed by those who cultivate tobacco on a small scale, or who have hands and time enough. As all the leaves on the plant do not ripen at the same time, but the under leaves are always a little earlier than the upper ones, they may gather the crop in the leaf, that is, taking only the matured leaves from the stalk; this must be done daily, and so long as there are leaves on the stalk. In this way the crop will be harvested slower, and it will cost more, but the tobacco will be of more even quality and better. The leaves are strung on strings instead of being hung up on sticks, with the same care and precautions as recommended for hanging up the whole plants. After the leaves are off, the stalks must be cut off or pulled up, for they would still vegetate, and needlessly take away nourishment from the soil.

No more tobacco, leaves or plants should be cut than can be taken to the drying-house and hung up the same day. Mild, clear weather will be beneficial

or lettuce-plants will thrive well, will usually produce good tobacco-plants. Having selected a suitable location, next consider how large a bed you will need. That depends on the surface you intend to plant out. A bed two rods long, by twelve feet wide, will produce a sufficient number of good plants to set an acre. On such a bed you should spread a heavy coat of good, fine, well-rotted manure, at least two inches thick; let it be free from straw or other litter. Then, with a good strong *back*, and long-handled spade, (or other as you prefer,) spade up the bed, mixing in the manure very fine. Have ready some fine dry brush, or the like, and spread over the whole surface; set it on fire and burn to ashes. A small quantity will answer better than a very large one, for if very much is burned, it is apt to do injury by burning the soil. The less quantity will tend to destroy any foreign seed turned up, and warm the ground. Having reduced the brush to ashes, take a fine iron or steel rake, and proceed to pulverize very finely the whole surface spaded up. After reducing it to as fine a state as possible, and having made it flat and level, leave it till the next day. Then, with your rake, carefully rake over the whole bed; it is now ready for the seed. Sow the seed on broadcast; be careful to sow it even and true. About two thimblefuls, or a little less, will be sufficient for such a bed. It is better to have too little than too much, as in the first instance, the plants will have room to form thick stalky roots and well-spread leaves, while in the latter they will be crowded with spindling tops as well as small roots. Having sowed your seed, take a good heavy garden-roller and roll the surface down hard and smooth. In the absence of a roll, a very good substitute can be made by taking a piece of two-inch plank, say eighteen inches long by fourteen inches wide; in the center, place an upright handle. With this spat the bed over, being careful to do it evenly, and to leave the surface solid and level, the reasons for which you will afterward discover in weeding and taking out plants to set in the field. This should be done in the spring, as soon as the ground will permit, say first of April, if the frost is out and the ground settled. The roll or spatter will cover the seed sufficiently without any other covering. To be able to sow the seed with the least trouble, mix it in thoroughly with wood-ashes or plaster, before sowing. To obtain plants earlier, you can mix your seed thoroughly in about a quart of light chip dirt from under your wood-shed; put it in some proper vessel, and wet to the consistence of soft putty, with water as warm as can be well borne by the hand. Set it on the mantle-shelf in the kitchen, not too near the stove or fire, but where it will keep warm. In the course of a week or ten days, the seed will have cracked the shell, and will show the small white germ or sprout. It should now be sowed broadcast very evenly, and treat as before described. If properly wet at first, it will need no more water to sprout the seed. Before sowing, pulverize the mass containing the seed, to facilitate the sowing. Having thus sown and rolled down your bed very nicely, it is well to have something to protect it from the encroachment of the fowls. For this purpose, spread a net of twine or a few brush over the surface, covering it so that they may not disturb the surface by scratching and wallowing. It may now be left till the weeds begin to make their appearance these you will need to extract by the roots as soon as the plants can be distinguished; these last may be known by two very small nearly round leaves opening over flat on the ground. Now procure a plank or some substitute a little longer than your bed is wide, also two blocks five or six inches square, as long or longer than your plank is wide; place one on one side of the bed, the other on the opposite side; on these two blocks, place your plank, and you will have a fine platform on which you can sit and weed any part, or all, of your bed, by moving it as occasion may require. To assist in pulling out the weeds, procure a moderately sharp-pointed knife, and with the same grasped in the hand with the thumb near the point, pinch out the weeds, being careful not to disturb the dirt any more than absolutely necessary. The process of weeding must be repeated as often as necessary, to keep the bed clean from weeds. The next step is preparing your field.

Soil.—Select a patch of good loamy soil—almost any such as will grow a good crop of corn will answer—that which has been broken up and tilled at least one season, is the best. On such a piece there will be needed at least twenty-five loads (sixty-four feet to the load) of good stable or yard manure to the acre. Cart this on, making five heaps to the load, putting them equidistant all over the field. Having finished carting on the manure, about the first of May, or sooner, if the ground is free from frost, and settled, commence to spread the manure evenly all over the ground, and with a good team and plow, turn it under, letting the plow run at least seven inches deep. Having done this thoroughly, let it remain for the present, and in the mean time you may plant your corn and do other necessary farm-work. As the weeds begin to start up a little, take your team and drag them down over the field, thus at once checking their growth and pulverizing the ground; repeat the harrowing, if necessary, before the second plowing. The last of May, or first of June, depending on the state of forwardness of your plants in the bed, plow your ground again, and not quite as deep as at first; let it lie a day or two; then harrow it thoroughly, going two or three times over it. If your land is in pretty good heart, no further manure will be necessary; but unless it is so, I would manure in the drill with fine, well-rotted manure or compost. Having completed the harrowing, you may commence to fit the hills, (and here I would say, by hills I do not mean those little mounds that will dry up and

for drying; strong and rough winds will do it too quick, and wet, damp weather will hinder it altogether. Should the latter continue for some time, the place of the sticks or strings must be changed, and if, notwithstanding this, the tobacco gets mouldy, it must be "fired." A fire is built in one or more excavations in the ground of the house, and the heat and smoke are allowed to go as evenly as possible through the plants. Care must be taken that the fire does not get too near the tobacco, so that it gets singed or burned. The place directly above the fire should, therefore, be free of tobacco. Stoves, with pipes to convey the smoke (which is of no value in drying) outside of the house are still better. The heat in the house may be kept up to eighty or ninety degrees.

The best arrangements for drying will not be of much avail unless the tobacco has been fully matured before harvesting, for if this has not been the case, it will never lose the well-known "green taste," and no after manipulation, no drying or sweating, will free it.

CURING.—When the leaves are dry, which is seen when the stems become of a brown color, and break when bent, the next work is to make *tobacco* out of them, for up to now we have nothing but a tasteless dry weed. Its hidden qualities must be developed. This is done by a process of fermentation, the *sweating of the tobacco.*

The leaves are broken one by one from the stalks, in damp weather, (otherwise they would break,) stretched out nice and even, and, with the ends in the same direction, put up in heaps. These heaps, of which every workman makes one, are afterwards put into one or more large conical heaps, from four to six feet in diameter at the base and from one and a half to two feet at the top. These are covered with woollen blankets, straw mats, or any thing that will press the heap lightly, and shut out the air. In twenty-four to thirty hours a fermentation sets in, the heap gets warm, and when it is so hot inside that the hand can not bear it very well, the heap is broken up and packed over again, pulling the tobacco that had been outside upon the inside, and *vice versa*, and treating the same way as at first. In such heaps the tobacco remains twenty to forty days, until all the heat is gone; then the heaps are again broken up in damp weather, the leaves tied up in bundles of one half to one pound in weight, stretched even and packed in boxes or hogsheads, pressed tightly and covered. Now the tobacco is done—is a salable article.

The process of sweating must be conducted with every possible care, for on this depends the color of the tobacco, and in a large degree its fine flavor. If the fermentation is too strong, the tobacco gets black and the flavor is driven out; if too little fermented, the color remains green and whitish yellow, and the flavor is not developed.

Those who raise the plant principally to get wrappers for segars will need to sort it.

SORTING is done right after the last breaking up of the heaps, and consists in laying the damaged leaves apart from the whole ones; and these again are separated, according to color or other qualities, for wrappers, into two, three, or four different kinds, so that every variety is of the same quality and color.

First quality—Color, dark brown; even over the whole leaf.

Second quality—Color, light brown; even.

Third quality—Color, dark yellow; even.

Fourth quality—Color, light yellow; even.

Fifth quality—Color, green, black, whitish yellow, spotted.

The first four kinds include the larger leaves, while the smaller ones go into the fifth quality.

Every kind is bundled by itself. This work is not difficult, and increases the price considerably. The first three sorts, and even the fourth, may be sold as wrappers, which bring the highest price. The fifth is mixed with the damaged leaves together, and sold for fillers or chewing tobacco and snuff.

No. IV.—BY WILLIAM H. WHITE, HARTFORD COUNTY, CONN.

In the following essay I shall endeavor to give some plain and practical directions for the culture of tobacco, derived from actual experience, and from observation of the experience of the most successful producers in the valley of the Connecticut River, where the crop is produced in as great, if not a greater degree of perfection than in any other section of our extended country; and as generally cultivated as any crop raised. Nearly every man who has an acre or more of ground, raises from one fourth an acre to five, six, or more acres. In the first place, it will be necessary to decide upon the best kind to raise. The Connecticut seed-leaf is the best kind, and is sought for more generally by manufacturers, speculators, and dealers generally, than any other sort produced in the above States; also brings a better price, the latter being the *one* object in raising tobacco. I take it for granted, you will look no farther, but will procure a suitable quantity of pure seed from some reliable source. It can be had from the seedsmen generally, or, better, of some acquaintance in this section.

SEED-BED. — Having decided upon the kind, and procured your seed, we will next proceed to select a good spot, and prepare the seed-bed. It is best to have it in some rich, warm, and sheltered soil, where the bleak north and north-western winds will be broken off, either by buildings or by tight board-fences, where the soil is a rich sandy loam, neither very wet nor dry, as in either case the plants will be likely to fail partially or wholly. A spot where cabbage

stud all the rain, but simply with the hand-hoe to strike the edge into the ground a little, three or four times;) then spat the hill, leaving the ground around level with the spat a little depressed. Put the hills two feet apart, and the rows three feet between. Begin on one side of the field, and to make the rows straight, set guides in the middle and end of same. It will pay you to take extra pains to make the rows straight, in looks and convenience, in going among it with the cultivator. Having made one row of hills, it will be easy to make the rest so by it. If necessary to put on more manure, with a small one-horse plow, turn a shallow furrow for the rows, observing to make them three feet apart, and straight, as above. Into such furrows strew from five to six loads of very fine manure or compost. It is better to strew it throughout the whole length than to put it in hills, as the crop will get the benefit without the danger of the hills drying up. With the hoe, haul in the dirt and fill the furrow level, covering the whole of the manure, and make the hills by spatting with the hoe as you go, observing to make them at regular distance. It is better, when convenient, to have the rows run north and south, that the sun may more readily shine on the ground to warm it, etc.

Planting Out.—Having thus fitted your ground, it will be necessary to improve the first opportunity for transplanting after your plants attain a suitable size, which will be when the leaves attain the breadth of two inches. This is best done in wet or rainy weather, but can be done at any time as described below. It having rained sufficiently to wet the ground down an inch or so, proceed in the following manner to remove the plants from the bed: take a common two-tined dinner-fork, or a stick sharpened to a point at one end; run this down by the side of suitable-sized plants, and loosen them by prying under them. With the other hand take them by the leaves and gently lift them out of the ground and place them in a basket provided for the purpose; proceed thus, and remove such a quantity as you may desire. Then with a good boy to drop them, proceed to the field. Such a boy will drop out as fast as two can set. Let him drop one plant on each hill, occasionally two small ones, to fill in where missing at some future time. To set them properly, take the plant by the leaves near the roots in the left hand, and with the two front fingers of the right, make a hole in the center of the hill by running them down straight; withdraw the fingers, and place the roots of the plant held in the other hand in the hole; with the aforesaid two fingers, push the dirt up to the side of the roots, and finish off by pressing the dirt in and down around the plant, which, if properly done, the plant can not be pulled up by a single leaf. Proceed in like manner with the whole. If your plants should be sufficiently grown, and no wet weather occurs, take a watering-pot and give the plant-bed a good soaking; then, as before described, take up your plants, being careful not to disturb the roots of those remaining; after which give the bed another good sprinkling. Set your plants as described before, and immediately water them well. Set them before you wet the ground, for it is done better; the water will then settle the dirt around, and stick them well. This should be done in the after-part of the day; the next morning water them again thoroughly. If properly done, nine in ten, if not the whole, will live. If you are afraid the sun will burn them, you can cover them up with a little short grass, or burdock, or other leaves. The writer has seen them set as described, and not covered at all, and they have lived and done as well as those set at any other proper time.

Cut-Worms. — The next, or at farthest, the second morning after having set your plants, go over to see that the worms do not eat up one half of them. You can tell where they are and have been, by seeing a plant with a single leaf, and sometimes the whole plant eaten off and drawn down into the hole occupied by a large brown or black worm; you will see little ant-hills like, and round holes in the ground; by poking around a little in the dirt, you will find a worm very near the mouth of these little holes. Destroy it, and all you can find, and thus save your crop. This searching for worms must be kept up till they cease to do mischief. All plants missing in the field should be renewed from the bed at the first opportunity. The morning is the best time to find the worms, as they are near the surface of the ground; later, they retire into the ground to appear again near sundown, and work during the night and early morning.

Cultivation.—Having got your plants all set, the next in order is, in a few days to hoe out the same. Take a cultivator narrowed up, and with a boy to guide the horse, go through; once to a row is sufficient for the first hoeing. Then with a common hand-hoe cut up all weeds and grass, brush the dirt down level around the plant; stir it but very slightly close to the plant; leave the stirring and hauling dirt up to the plants to a future dressing. Go over the whole in like manner; then again in ten days or a fortnight, keeping the worms off in the mean time. With your cultivator, go twice to a row. This time you can stir the dirt pretty freely around the plants and renew it, being careful not to leave any leaves covered up, or partially so, as it will spoil them. As the leaves are what tobacco is grown for, be sure in all the different processes you go through with, to save them from any thing that will injure them. Should any plant have its center bud broken or eaten off, it will come up with several suckers or sprouts, and will not amount to much; better replace such, if not too late. It is better to do the rest of the hoeing

without the use of the cultivator; stir the ground and keep it free from weeds by going through as often as necessary with the hoe.

Worms.—The tobacco having got up from ten to twelve inches high, look out for the green worm which eats the leaves. They are often found earlier. You will see a small round hole oftentimes no larger than a large pin-hole in the leaf; if you turn it up you will be very apt to discover on the under side a small worm no larger round than a common thread needle, and half an inch in length. *Kill him*, and all his kind, for if left, he will grow to the size and length of your finger, and would not make much of a breakfast off a third of a full-grown leaf; keep the growing plants free from all such by going through the field often, and picking them off. Well-trained turkeys will oftentimes assist in destroying them. All other fowls should be kept off, as they often do more damage than good by scratching, and otherwise injuring the leaves.

Topping and Suckering. — The plants having grown to the hight of two feet, will begin to run up to blossom; let them get up pretty generally even; then go through and break off the stems about two and a half feet from the ground; have the whole even on top. A few plants will not be quite ready to top; let such remain, and in a few days go over the field and top those left. This will be about the middle or twentieth of August. If any plants are later, they should be topped before the first of September, that they may have a few days for their leaves to fill out and ripen. Leave three or four of your earliest and best plants to go up to seed without topping. The suckers will now begin to grow, at first near the top, and then farther down; these should be broken off as they make their appearance, that the whole growth may go into the leaves. Also, if any branches come out on your plants left for seed, break them off, and only leave those close to the top; look out at all times for the green worm, for they will work as long as the crop stands, and frequently, if not shaken off, after it is hung in the shed, as long as it remains green.

Harvesting.—In the course of two or three weeks after topping, the plants will begin to ripen, which may be known by the change in color of the leaf. It will look spotted with spots of lighter green, a yellowish green. When fully ripe the leaf may be folded together, and moderately pressed without breaking or cracking. Now is the time to begin to harvest it. All this is supposed to take place before there is any appearance of frost, as a very light frost often does great damage. All touched by it is ruined, and good for nothing. The crop must be cut and hung, even if not fully ripe, before any frosts occur. If there are strong appearances of a frost you can secure the crop by cutting it down, and putting it either under your sheds, or by putting it in piles, not over a foot deep, in the field, and covering with straw. It is well to let it stand, if not fully ripe, as long as it can safely, for the cool nights have a tendency to thicken up the leaves. The cutting is best performed with a hay-knife, with a sharp, rounding point, in the following way: stand at the right-hand side of the plant or row; with the left hand grasp the stalk down two or three leaves from the top and lean it back on the row; now, with the point of your cutter held in the right hand two or three inches from the stalk, close to the root under the bottom leaf, with a sudden stroke or dab, sever the same from the root; lay it gently down back in a line with the row. Proceed in like manner to cut what you can take care of, and not get injured by sunburn. Have two rows of buts together, lying the same way for after-convenience. This cutting is done after the dew is off in the morning, or in the afternoon. Let it remain until the top side is somewhat wilted; then commence to turn it over. Step between the two rows with the buts lying toward you, and with each hand take a plant on either side; raise them from the ground, and by twisting the hands in or out, turn the plants, laying them either to the right or left, as most convenient, at right angles to their former position. Go through with the two rows, and you have the next two with the buts the other way; take these and lay the tips directly opposite those first turned, and you have an alley, with the buts of the plants of two rows on either side, which will be convenient to drive in to load. When wilted sufficient to be handled without breaking, if in the forenoon, you can load it from the rows as they lie; if in the afternoon, it is best to put in hakes, which is done by putting five plants at the bottom, and on these four, decreasing one on each layer, and terminating with one on the top; this will protect it from dew and wet. The best cart for hauling the tobacco is a one-horse wagon, geared long, with merely a platform resting on the axles. Such a cart can be driven between the rows and loaded from either side, having the buts of the plants uniformly one way, and laid crosswise on the platform. Great care should be used, in all the handling, not to bruise, break, or tear the leaves. Having cut all, excepting your seed-plants, strip all the leaves from these, and set a stake to each to tie it up to; let the stake be a foot taller than the plant; it will answer to keep a piece of old carpet from breaking down the stalk when you wish to cover it up on cold nights. Let the seed-plants stand till the pods or bolls are cured to a brown, and the seed is ripe; then cut off the top of the seed-stalk, and hang it up in some dry and safe place, where it will be ready to shell and use the next season; only the ripest and best pods should be used.

Buildings.—We will next consider what buildings are necessary, and how arranged; you will not have time to build now — therefore, will have to use such as you have; your stables, sheds, and barn-floors can be arranged so as to hang up an acre

or two, by setting stanchions with holes mortised in them to hold rests for your poles about four and a half feet apart. Set such ones on either side with a very stout rail, one end in either post. Set these as often as you may need them, depending on the length of your poles. No poles should be so long as to sag very much when filled with plants. But for another reason I would build a house expressly for hanging and storing tobacco. Make it of good, liberal dimensions, thirty feet wide, by forty or more in length; posts, fourteen feet, with two tier of girts for poles to rest on; one tier can hang on the beams, and another above on the purlin plates, thus hanging four tiers under the same roof. Ventilate by a ventilator in the roof, also by hanging every other board of the siding on hinges. For such a building, I would have a tight floor to the whole, and underneath a good walled cellar lighted with suitable windows, and chimney in one corner, with a stove, to keep fire in in very cold weather, to work by when stripping the tobacco. For poles to hang on, I would get, if possible, straight, slim, white pine staddles about four or five inches in diameter; shave the bark off smooth, and we have poles that will last and remain straight a lifetime, if kept housed.

Hanging.—Having provided all required, even to the strong cotton or hemp twine for tying up the tobacco, have a good man to hand it to you. Commence by tying the end of your twine around the but of a plant, about two inches from the end, in a slip or loose knot; place this plant at one side of the pole near the end, your hand carrying the twine over the pole; on the opposite side of the pole, about six inches along, place another plant, and with a single turn of the twine around it from before, round back, and by drawing it close, the plant is secure. Proceed thus till you have filled your pole; then with a knife, cut a notch in the pole and draw your twine through, and it is fast. You can now cut it off and commence another pole. Place the poles far enough apart to prevent the tobacco crowding; about a foot will do. In this manner you will have a row of plants hanging on each side of the pole about a foot apart. The man, in handing up, should take the plant by the but, carefully from the pile or load, raise it up and gently shake it sideways, to shake off dirt and loosen the leaves when stuck together, and also adhering to the stalk; with the other hand, take hold about midways of the stalk and pass to the one tying up, enabling him to receive the plant in such a way as to not need to shift it in his hand, but to place it immediately into its position beside the pole. All leaves which are accidentally or otherwise broken from the plants, should be gathered up each day, and hung three or four in a bunch, the same way as the plants, or string them on a string; the latter is the best way — with a large needle-thread, a suitable cord, and on to this string the leaves one at a time, by running the needle through near the end of the stem. These can be hung by attaching the two ends to some suitable nail, and having it remain stretched In this way they will cure very well.

Curing and Stripping. — Having housed the whole of your crop, give it all the air you can, by opening doors, shutters, etc. Let them remain open during pleasant weather, remembering to close them in wet, damp weather, as well as nights; and also shading the crop so far as may be from the direct rays of the sun, to prevent blanching. When it has nearly cured, shut it up and let it remain till perfectly cured. This may be known by the stem of the leaves being dried up, so that no green sap will show itself. If you have hung in your stables and other places that you wish to use, it will be necessary to take it down and strip it at the first favorable opportunity, which is described farther along. The separate building elsewhere described is to be preferred, as it does not necessitate any immediate hurry in getting it down. In such it can be allowed to hang and freeze and thaw two or three times, which improves the color and weight, and will give more leisure in stripping, etc. Watch a favorable time, when it rains and is damp, to open your buildings, and let in the damp air till the tobacco is damped, so that it can be handled without any danger of breaking the leaves. It need not get too damp, as in that case it is liable to injure in the pile before you can get it stripped. It will gain dampness from the stalk. You may now commence where you hung the last plant on the pole, and you can very readily unwind and take down the whole. (It is best to save the twine, at present prices, as it will answer to use again.) Having previously prepared a place in the cellar under your building, by laying down some boards to keep the tobacco from the ground, have help enough to take it as fast as taken from the poles, and carry it to the place prepared, and pack it, by placing the buts out and the tips in, and overlapping about one third the length; this should be done evenly in layers, keeping the buts just even, so that no leaves may hang out to get dry, and thus be wasted. Having taken down and thus packed a suitable quantity, the stripping may commence. As much should be taken down as can be stripped in from four to six days, as ordinarily it will not lie longer in a pile without heating, and not as long if the weather be mild or damp. It is best to do only what can be well done with the help you can command. Begin to assort the leaves; it is best to make three sorts; first, for fillers, the poorest; second, the next imperfect; and lastly, the perfect and best leaves. In this way you get more in the aggregate for the crop, than if only two sorts are made Let one take the plants and strip the very poorest, usually the ground-leaves, holding them in his hand with the stems even, till he gets a hand about two inches in diameter, and then with a leaf, bind around, beginning at the but as close as may be -the closer, the better it will look—and wind it around, spreading it

down a little, and finish by tucking the end into the hand. Next after, take the same plants and open each leaf, and strip all imperfect for the second quality. Lastly, strip the remaining perfect leaves, keeping each sort by itself, and being very particular to keep the ends of the stems even, also the leaves which are of a length in the same hand, especially of the best sort. An imperfect leaf will do as well as any to bind the hands with, and will be a saving; be sure and do this part very neatly; for if bunglingly done, the nicest tobacco will show very poorly, whereas, a smaller growth well done will show to better advantage, and perhaps outsell the larger growth.

Packing.—After having stripped, it is best to pack it down properly each day it is done, in some place secure from drying winds, or from wet, or any thing from which moisture may be absorbed. Pack it buts out with the tips in, and lapping about one third the length, laying one row of buts one way, then another in the opposite, keeping them straight and even, to prevent the air from drying it; press it down by standing on it on your knees while packing, and finish off by covering it closely with either blankets or boards, and on top put weights to press it down as compact as possible. It is now ready for inspection by the tobacco-dealer, and unless you wish to case it yourself, it will remain in this situation perfectly safe. If sold to a speculator, he would probably prefer to case it himself, should it be necessary for you to remove it. Having once packed it in a pile, you can pack it on a wagon having sideboards, keeping the buts outside at the ends and covering up closely. Be careful to keep the leaves straight, to prevent wrinkles, which make it look very bad. If you are desirous of casing the tobacco yourself, procure cases made of one-inch boards, planed on one side, of the following dimensions: three and a half feet long, and two and a half feet the other way; these any joiner can make, or if you have the tools, make them yourself. Procure four cleats two and a half feet long, one inch thick, and three wide; to these nail the ends, which are to be two and a half feet long; on these ends nail the sides; turn the box down and nail on the bottom; let it come out flush with the sides, and it will be two and eight twelfths feet wide; turn the other side up and fit the cover; this need be merely tacked on so as to be easily removed when wished. You now have a box into which you can press three hundred weight of tobacco. To pack it properly, have one to hand it, while another packs it in the case, the buts against each end of the case, letting the tips lap in the middle; fill about three fourths the way to the top; have a follower to fit the size of your box, made by nailing boards to two good, stout cleats, one near each end. Put this follower on with good blocking above; press it by a lever twelve or more feet long, having a fulcrum at the short arm, and the force of two men on the long arm of the lever; by filling and pressing in this way about three times, you may get in three hundred pounds, which is enough to handle conveniently.

I have thus given a precise account of the practice of the most experienced and successful growers of the crop in the State of Connecticut. I might also here remark that this experience and observation has extended over a period of nearly thirty years from the time I was a small lad, when the tobacco was sold here at three or four cents a pound. It is now selling as high as thirty for the first quality.

No. V.—BY OLIVER T. BISHOP, HARTFORD COUNTY, CONN.

Tobacco has been raised in the valley of the Connecticut for more than twenty-five years, and has gradually spread in extent, until it has become one of the "staples," especially in Connecticut and Massachusetts. Its culture will demand the almost constant attention of the cultivator, from the time of sowing the seed until it is carried to market.

Seed-Bed.—As soon as the frost is out of the ground, and the land is sufficiently dry to allow of the working of the soil, which, in this latitude, is generally from the first to the fifteenth of April, the seed may be sown. The bed should be in some warm locality, and near water, if convenient, in order to facilitate watering the plants; this, however, is immaterial. A good plan is, to manure the spot well and plow it in the fall, and if removed from buildings, pile on, in the spring, a heap of brush, burn it, and rake in the ashes with the soil; remove all stones and sticks, and pulverize the soil thoroughly. The next day it will be ready for sowing, giving the ground time to cool, so as not to burn the seed. If very early in the season, the seed may be sown dry, by mixing it with plaster, in order that it may be more evenly distributed. Later in the season, the seed should be sprouted by mixing it with some fine mould, or decayed wood, such as is found in old, hollow apple-trees, and placing it near the stove or warm place, keeping it moist; let it remain four or five days, or until you can see that it has just sprouted. Then sow it, using at the rate of a thimbleful of seed for each square rod of the bed. Do not cover the seed, but simply pat down the bed with a shovel or board, and cover it over with some brush to keep off hens, etc. When the seed is sprouted it will generally come up in a week, sometimes sooner, and may be known by having two very small, nearly round leaves. After the plants are up, sow on a little plaster occasionally. Keep the plants free from weeds, and thin them out where too thick. If it should be dry weather, the plants should be watered every night, using a common watering-pot; a weak solution of guano occasionally will stimulate them. The ground should not be allowed to get dry, as the

plants will not grow. A tight board-fence put up on the north and west sides of the bed will keep off cold winds and reflect the rays of the sun. The bed should be covered with blankets or straw on frosty nights or the plants may be destroyed. The kind of tobacco best adapted to this locality, and generally grown here, is the *broad-leaf* variety of the Connecticut seed-leaf. There is a great difference in the width of leaves of the same length, and it is just as easy to raise a large, broad leaf, as a long and narrow one.

Preparation of Soil.—A rich, gravelly soil is best adapted for the culture of tobacco, producing a finer quality than can be grown on meadow-land. A piece that was highly manured last season, and planted to corn, will be a good place to try. Let the land be plowed deep about the first of May, turning under a heavy coat of coarse barn-yard manure, say from thirty to fifty cart-loads to the acre, to the depth of seven or eight inches. About the twentieth of May harrow it thoroughly, and from the first to the tenth of June put on well-rotted manure or compost, at the rate of fifteen or twenty loads per acre, and with a light, one-horse plow ridge up the land, making the ridges from three and a half to three and three quarter feet apart; make small ridges, just enough to turn under the manure, that is, about three or four inches above the surface. I have found this plan of ridging the land to work well, as it can be done quicker and it gives a chance to set out the plants a little higher than when the land is plowed clean, unless you make too much of a hill, in which case the plants are more liable to dry up. It, at the same time, obviates the danger of setting them too low, leaving them in danger of being flooded and covered with dirt in case of a powerful rain. After the land is ridged, make, with a hoe, a little hill or spot where each plant is to be set, taking care to remove therefrom all trash or stones. If desirable to have the rows run both ways, make the hills crosswise the ridges, with the rows two and a half feet apart, with the hills on each ridge, or if but one way, make the hills on the ridge every two and a half feet, or nearly so. This makes the plants three and a half, or three and three quarter feet between the rows, (to allow a cultivator to be run between the rows, and give room to sucker and worm the plants when large,) and two and a half feet in the row, giving five or six thousand to the acre. About the fifteenth of June, or as near that time as the weather will admit, is the right time to begin to set out the plants.

Transplanting.—Having the ground prepared as stated, immediately after a rain, or what is better, just previous to a shower, take up the plants that are large enough, that is, those that have three or four leaves as large as a silver dollar. If the bed is not too hard, they may be pulled up by placing the two fore-fingers of one hand under the leaves and the thumb over them; if the roots break off, the ground can be loosened by running a fork down by the side of the plant. Place the plants in a basket or pan, and when full, let one go over the rows, dropping one plant on each hill. Set them out by making a hole in the center of the hill with the fore-finger, placing the roots carefully, and press the soil about them firmly. If it rains soon after they are set, or if the ground is quite wet, they will soon take root and commence growing; should the sun come out hot, they will need to be protected by placing some short, green grass over each plant and watering it well; this, however, is not necessary if the ground is much wet. Much depends upon having a good time for setting. After the twentieth, it you have not the plants large enough to set, get them somewhere else, if you can, (they can generally be obtained for from fifty cents to one dollar per thousand,) if you have a good time for setting. They will generally wilt down during the day, but if they look fresh in the morning they will do well. A little plaster sprinkled on the leaves helps them along at this time. The plants should be looked over every morning or two, as the cut-worms are sometimes quite troublesome. Dig around the roots of every plant that has been eaten, to find the worms. Sometimes, a plant that looks well, apparently, has been spoiled by having the middle eaten out. All missing plants should be re-set as soon as possible, that they may be uniform in size, as that adds greatly to the beauty of the crop, and nothing looks much finer, while growing, than a field of tobacco of uniform size.

Cultivation.—After the plants have been set about two weeks, or long enough to get rooted, they will need hoeing, to loosen the ground around them and kill the weeds which may have started. Use a common cultivator, going twice between each row to level the "balk" between each ridge, and work it thoroughly. Care should be taken not to let it run too near the plants so as to disturb the roots or to cover the leaves with dirt. Then, with a hoe, level off the ridge between each plant a little and hoe lightly around them. In this way an acre of tobacco can be hoed nearly as quickly as an acre of corn. Hoeing should be repeated often enough to keep the land free from weeds and the ground light about the plants. It can be easily hoed without the cultivator, or you can use it, taking out the two back-teeth (or one of them) after the plants get larger.

Insects.—The cut-worms will continue to trouble till there have been a few hot days, or the plants get leaves as large as the hand, after which they will do but little damage. Missing plants may be re-set until about the tenth of July; after that time they will not do much. The top, or tobacco-worms, begin to appear about as soon as the cut-worms leave, and if well cleared out at first, when they can be more easily found, much time and tobacco will be saved.

Topping.—Cultivators do not agree as to the time and where to top the plants. Some favor the plan of

topping as soon as the blossom-buds appear, others prefer to wait until in blossom. I think there is no harm in letting the *earliest* plants bloom before being topped, but after once beginning, they should be broken off as soon as the buds begin to look yellow, and the latest plants as soon as the buds appear. A new beginner will be apt to top the plants too high. The object is to ripen and develop as many leaves as the plant can support; if topped too high, the top leaves are small, and when cured are nearly worthless, and the other leaves are not as large or heavy, whereas, if topped too low, then you lose one, two, or three leaves, which the plant might have supported. As a general rule, *a plant just in blossom should be topped down to where the leaves are full seven inches wide*, leaving on the stalk from fifteen to eighteen leaves. This will leave the stalks about two and a half feet high in good tobacco. Later in the season top the plants sooner and lower. Let as many of the earliest plants as will be wanted remain for seed. One plant will furnish seed enough to put out five acres, at least. These should be wormed and suckered like the rest, only leaving the suckers above where you would ordinarily break it off, were you to top it. The piece should now be looked over every other day, to break off the suckers and catch the worm. This should be done as soon as the dew is off in the morning, and towards night, as the worms are eating then, and can be found more readily, while in the heat of the day they remain hid. Great care should be taken not to break off the leaves while going through it, as they are nearly all wasted before the crop is ripe.

SUCKERING.—As soon as the top is broken off the sap is thrown into the leaves, causing them to expand rapidly. In the mean time suckers will start out just above where each leaf joins the stalk; these must be broken off, or the growth of the leaf will be checked, as the sap will be thrown into these young sprouts. Those nearest the top will start soonest, and will require breaking off twice before the plant is ripe; those at the bottom must all be broken off. This is the hardest and slowest work of all. Not only will these suckers check the growth of the plants, but if allowed to grow will soon break or pry off the leaves, or cause them to grow out at right angles from the stalk, rendering them more liable to be broken off. It is a good plan to have a piece of corn on the north side of a piece of tobacco, or, at least, two or three rows, to shield the growing plants from winds.

CUTTING AND HANGING.—The plants grow rapidly and require less than three months from the time of setting before they are ready to cut. Any one used to the cultivation of the crop knows when it is ripe, the veins of the leaves are swollen, the leaves begin to look spotted and feel thick and gummy. The ends of the leaves will crack on being doubled up. After it is ripe the sooner it is cut the better, as it is liable to injury by frost or hail, and will not increase in weight as fast as the worms eat it, and the leaves get broken by catching them. The plants will generally ripen from the first to the fifteenth of September; they should not be cut immediately after a heavy rain unless in danger of frost, as a portion of the gum washes out, but should be allowed to stand two or three days. The cutting should not begin until the dew is off; a cloudy day is best, for when the sun shines hot, they will not have time to wilt sufficiently before they will sunburn, which may be known by the leaves turning white and looking puckered. Commence on one side of the piece, laying the plants all one way, in order to facilitate loading. The plants may, most of them, be broken off easily, by gently bending them over one way and another. Small plants, which will not break, may be sawed off with an old saw or cut with a hatchet. If the sun shines too hot, the plants should be turned over carefully to prevent burning. After lying an hour or two to wilt sufficiently, so as not to break by handling, they may be carted to the barn or shed. Ample room for curing should be provided, and if any one expects to raise tobacco for any length of time, it is best to have a building built expressly for it.

BUILDINGS.—In the first place one wants to know about how much room they will need, and then build accordingly. To hang an acre of good tobacco requires a building about thirty by twenty-four feet with fifteen-feet posts. Two girths should be framed into the posts on all sides of the building; one five feet above the sill, and the other ten feet above, to rest the poles on, also to nail the covering boards to. This gives a space of five feet for each tier of plants. Have a beam run across the center of the building, with a post in the middle with girths to correspond with those on the side, extending lengthwise through the middle of the building for the poles or rails, each twelve feet in length, to be laid upon; or if sticks are to be used (as hereafter described) lay rails or poles once in four feet for the sticks to rest upon. Place a ventilator upon the center of the roof, and have one board in every four feet hung on hinges, to be opened or closed at pleasure. If made with a floor and a cellar underneath, to let down the tobacco into when ready strip, it is all the better. We will now return to the crop, and commence hanging it. A common way of doing it is by tying with common twine. Tie the end of the string tightly around the but of one plant, and by placing it against the side of the pole nearest you, put another plant on the opposite side and carry the string over and around it, placing the plants alternately on each side of the pole until filled, then fasten the string, place the pole in the right place, (it should be nearly right before it is filled,) and commence on the next one in like manner, having some one to hand the plants as wanted. As to how thick to hang it depends upon the size of the plants, but in good-sized tobacco about nine inches on each side is close enough.

that will be from thirty to thirty-two on each pole of twelve feet; place the poles from fifteen to eighteen inches apart. Another method of hanging, much practiced and approved by many, is to hang on slats or sticks sawed out four feet long, one and quarter inches wide and five eighths of an inch thick. Chestnut timber is generally used here. The common lath answers very well for this purpose. An iron made something like a chisel is used to slip on to one end of the sticks, which are sharpened a little at one end to receive it. It is made about eight inches long, wedge-shaped at the small end, and a socket one half by one inch to slip on to the sticks. When ready for use have a place fixed near where you unload, to hold one of these sticks out at right angles from a post and about four feet from the ground. Let the plants be handed you from the load and slip them on the stick, piercing the stalk about six inches from the but; put six or seven plants of medium size on each stick, thicker if smaller; when hung it will appear as in the cut. As each stick is filled, it may be carried to its place in the barn. In getting them to the top of the barn they may be handed up with a pitchfork, lifting them by the middle of the sticks. These sticks should be about eight inches apart. I think a greater amount can be put into a given space by this method without danger of sweating, as it is more evenly distributed. The loose leaves that have been broken off while handling, may be cured by placing four or five together and securing to a small pole, in the same way as plants are hung with twine.

Saving Seed. — Strip the leaves off from the seed-stalks and tie up the stalks to a stake driven into the ground by them, else they may be blown over. The seed should be gathered before hard frosts destroy their vitality; when fully ripe the pods or seed-vessels may be picked off and dried, then crush or roll them between the hands until the seeds are all out, the seeds may then be separated from the chaff by passing it through a fine sieve.

Curing. — After the crop is all housed the building should be well ventilated by opening the doors and boards on hinges, to secure a free circulation of air throughout the building. On rainy, damp, or very windy days the building should be shut up as tightly as possible, and opened again on return of fair weather. After hanging several weeks, until the leaves are mostly dried, the building should be closed to prevent the dry leaves from being broken by winds. It usually requires about twelve weeks to cure the plants thoroughly, that is, so that there is no more juice in the leaves or leaf-stems; it matters not if the main stalk is not dry, you need not expect it, and there will be green leaves that will not cure but freeze while green and are worthless. It will then be ready for

Stripping. — This must be done only after a damp, rainy spell has softened the leaves, so that they may be handled without breaking; it may then be taken from the poles and stripped as fast as taken down, or it may be carried into a cellar and be piled in heaps to be stripped at leisure; care must be taken, however, not to let it remain too long in this condition, as the green stalks would soon heat and injure it. To strip a plant, hold it in the left hand by the but, and with the other pull off all the bottom leaves and drop them on the ground or floor in a pile for "fillers," or the poorest quality; next, take off three or four more, or until you come to the best leaves, these put in another heap for the "seconds;" now strip off the remainder for wrappers, except such as are badly worm-eaten or otherwise injured — such go into a poorer quality: throw the stalk away and put the handful of wrappers under the left arm to hold while stripping another plant in like manner, put the two handfuls of wrappers together, taking pains to keep the buts even, and bind them by firmly winding a leaf around them at the but, commencing within a half or three quarters of an inch from the end, and winding down smoothly about two inches, part the hand and put the end of the band between the parts, then close it again, thus securing the end and holding it tight. If the plants are very large, the leaves from each may be tied up separately instead of putting two together. Hands that will weigh half a pound are about large enough. The seconds and fillers are afterward picked up and tied in the same manner. Much of the value of tobacco in market depends upon the manner in which it is assorted and done up, as a few poor leaves in a hand would make a difference of several cents per pound in the price; none but good sound leaves, free from rust, pole-sweat, frost, or large holes should go into the best quality. Small plants rarely contain any first quality, but should go into the seconds and fillers. A little practice will enable any one to sort it properly, better than any rules that can be laid down on paper. There is much difference in the color and fineness of the leaf, a darkish red or cinnamon color is preferred to that of a darker shade; the veins should be small and far apart and dark as the leaf, as "white stems" are objectionable by reason of their growing lighter still when going through the sweat after it is cased. After it is stripped it should be packed down in a cool dry place. Lay some boards flat on the ground about four feet wide, and as long as you wish the pile to be, and commence by laying a row on one side of the platform with the buts out, then on the other side in the same way, letting the tips lap about six inches, or just enough to keep the pile level; proceed in this way, laying on each side alternately till all is packed; lay the hands as close to each other as possible, not sprawled out like an open fan, but compactly. Lay some boards on top of the pile and put on just weight enough to keep them snug. Some boards or blankets should be put at the ends of the pile to keep it from drying up. The seconds and fillers are packed in the same way; they may be

packed in a separate pile or on top, or at the ends of the wrappers. It is now ready for market. If it should remain long in pile it should be examined occasionally to see that it does not hurt, as it sometimes happens that when taken down, stripped and packed when it is too damp, it will grow damper and perhaps rot. If too damp, it should be repacked on some windy day to give it an airing, shaking out the dampest hands and letting them remain exposed till sufficiently dry to be repacked. The stalks, after being stripped, should either be spread on grass land and remain till spring, when they may be raked up and carted on to the land designed for the next crop of tobacco, and burnt, or let them remain in the barn till spring, when they may be cut up fine and dropped into potato or corn-hills, using a good-sized handful to each hill.

I have raised the past season on a little more than three fourths of an acre one thousand four hundred and twenty-seven pounds wrappers, worth at the present time twenty-five cents; two hundred and twenty-one pounds seconds, worth twelve cents; and one hundred and forty-six pounds fillers, worth ten cents; amounting to one thousand seven hundred and ninety-four pounds, worth three hundred and ninety-seven dollars and eighty-seven cents.

Cost of raising an acre of tobacco:

Interest on land,	$12 00
60 loads manure at $1, one half is,	30 00
Plowing twice and spreading manure,	3 00
Making hills,	1 00
6000 plants, at 50 cents,	3 00
Setting out plants,	2 00
Hoeing three times,	5 00
Worming, topping, and suckering,	10 00
Cutting and hanging,	10 00
Stripping,	10 00
Hauling to market, etc.,	4 00
	$90 00

No. VI.—BY A. S. THOMAS, HIGHLAND COUNTY, OHIO.

I was raised in one of the best tobacco-growing districts in Eastern Virginia, and was familiar with every step in its production for twenty-four years. I moved to this State in the fall of 1844, and have raised more or less of it ever since. Therefore, I ought be competent to give the "practical information" desired.

The Seed.—In Virginia there were as many varieties of tobacco-seed as of corn or wheat. I will name a few: The "Big Frederick," the "Little Frederick," the "Blue Stalk," the "Brittle Stem," the "Big Orinoco," the "Little Orinoco," and half a dozen others, each having, or supposed to have, some characteristic distinguishing it from all the others. But the "Brittle Stem" and the "Orinocos" were the varieties mostly cultivated, the former for its early maturity, the latter for its comparative heaviness. There are several varieties, also, in this vicinity, such as the "Brittle Stem," the "Graham Tobacco," and the "Cuban," but the names convey little certain information, as the same varieties bear different names in different localities. But some varieties are evidently to be preferred to others—one, noted for early maturity, all things else equal, is preferable to another that ripens late. One, distinguished for fineness of texture, all things else equal, is better than another of coarser fiber, etc. Upon the whole, the *surest* and most *profitable* variety is that which ripens earliest, and yields the largest number of pounds, cured, to a given number of hills planted.

Sowing.—In Virginia this was done in the first favorable weather in February, and I have done so here up to the last year. But, hereafter, I shall sow as soon as convenient after the seed is ripe. I was led to this conclusion by this fact: two years I saw millions of plants coming up under the seed-stalks of the previous year; the seeds had fallen to the ground, survived the winter, and were more forward than that sowed in February in prepared beds.

Seed-Bed.—It should be moist, or convenient to water, as it may require watering in dry weather. It should have an open, southern aspect. It should be burned sufficiently to kill the seeds of all weeds and wild grasses, for if not then killed they will come on before the tobacco-plants and surely destroy them. Hence the importance of *thorough* burning. Having burnt the ground well, rake off the coals and all other rough and coarse materials. When cool enough, dig it up fine and sow the seed. Any one that can sow cabbage or turnip-seed can sow tobacco-seed.

Quantity of Seed.—A table-spoonful of good seed will sow one hundred square yards. Such a bed, under favorable conditions, will yield ten thousand plants, and so in proportion. If the bed should need water, give it, and finely-pounded sheep-manure sowed over it will greatly expedite the growth of the plants. If the seeds are sowed too thick the plants will be crowded, and fail to obtain the proper size, at the right time. It is evidently important to have the plants uniform in size, and as many of them as possible put out at the first planting. Therefore, endeavor to have enough of plants in your bed or beds—to have them all of the same size, that all may be planted out at the first planting. When that is the case, the priming, the lopping, and the cutting can all be done regularly. But when planted at intervals of two or three weeks all the subsequent operations come on irregularly.

With seed sown any time before the first of March

in properly-prepared beds, and other conditions favorable, the plants can be set out some time between the twenty-fifth of May and tenth of June. At that time their leaves will be as large as a dollar-piece Overgrown plants are not desirable But before your plants are ready you should attend to

The Kind of Land.—This depends somewhat upon the character of the tobacco designed to be raised. If the object is weight, take old and rich land. The richer, (with animal manures,) the heavier the tobacco; the heavier the tobacco, the coarser will be its character, and, in old-established markets, the less it will bring per pound. Any rich land will bring heavy tobacco, provided it is not too wet. Excessive moisture is destructive to its growth. No farming product is so effectually destroyed on wet lands as tobacco, and none is so little affected by dry weather. Last season there was no rain in this section from the third July till the thirteenth of October. Other crops were seriously shortened in consequence of such a drought, but better tobacco I never saw grow. I would say, then, that any land, good for any other crop, will bring good tobacco, if it is not too wet.

The Preparation of the Land.—To do this well, (and it is greatly to the interest of the grower,) requires deep plowing and thorough harrowing. Like all other crops, tobacco will do best in land best prepared for it. Having plowed and harrowed the land, the next step is to lay it off in rows. If the land is old ground, and rich enough to bring eighty bushels of corn to the acre, mark off the rows four and a half feet each way, to the cardinal points, if convenient, but, in any case, as straight as possible. This is essential to the subsequent thorough plowings. In Virginia the practice was to make hills as large as a bushel of sand would; but I am perfectly sure that three fourths of that labor was unprofitable. Nor is it best to plant on a flat surface, for two reasons: first, because the plants are likely to be overflowed in wet spells; and, second, because they can not be as easily or as well worked with the hoe or plow. For these reasons I would prefer an elevation of six or eight inches, and to obtain it I would throw two furrows together with a one-horse turning-plow. When ready to plant, these ridges should be flattened six inches square, at intervals of exactly four feet, at which points the plants should be set out, just as you would cabbage or tomato-plants. Having planted your crop, the next consideration is

The Mode of Cultivating.—When the leaves are half the size of a man's hand, it should be gone over with a cultivator, or what is called here a "double-shovel." Whatever the implement may be, the object of the operation should be to stir the land four inches deep, and kill the starting grass or weeds. This plowing should be followed by a hoeing, taking the grass out of the hill, and covering the surface all around, up to the plant. When the leaves are eight or ten inches long, the crop should receive a second plowing, followed immediately by a second hoeing, with the same general objects. No other hoeing is required, unless the land be very foul, but a third plowing should be given about two weeks after the second.

Now, the substance of these directions is simply this: to work tobacco, with plow and hoe, in such ways, and at such times, and with the same object in view as you would any other crop, and that is, to destroy grass and weeds, and keep the surface well pulverized. Under favorable conditions, your plants are now in a state to receive another manipulation. But before I proceed to that, I will remark, that I have seen many valuable crops of tobacco raised without any hoe-work—altogether with the plow.

Priming.—This consists in pulling of the bottom leaves, to the number of four or five. Any plant large enough to top ought to be primed first; as a general rule is, not to prime until the plant is ready to top also. Many good planters omit the priming process altogether, though by that plan they increase the class called "lugs," and lighten their other and better qualities of tobacco. But I would advise all planters to prime their crops. The next work in the cultivation of the crop is called

Topping.—This is the most important operation yet performed, and simply means pinching out the bud, or cutting off the top of the growing plant—important, from the fact that the operation may leave too many leaves on the stalk to grow, and ripen, if they can, or it may take off some that would have grown and ripened well. It is evident that the growing stalk must be shortened at some point; hence the necessity of the exercise of judgment.

If the directions already given have been duly observed, five sixths of the crop will be large enough to top and prime in August, and ripe enough to cut by the fifteenth or twentieth of September. But if a rule *must* be given, I would suggest the following: Prime the plant, as above directed, then count as many leaves, from the bottom up, as there are weeks intervening between the time of doing it and the fifteenth of October. I say the fifteenth of October, because that is the time at which killing frosts usually come in this latitude. There are, no doubt, exceptions to this rule but it is designed only as a *general* one. All conditions favorable, a tobacco-plant will ripen in as many weeks, from the time of topping it, as there are leaves left on the stalk. Consequently, if the topping is done early, it can be topped high, if later, it must be done lower, and if still later, still lower. Planters differ very much at this point. Some will top as high as sixteen leaves, others ten, and a great many at eight. My own opinion is, that a plant topped at ten will weigh as much as one at sixteen, topped at the same time, and on the same kind of land. I think I have been sufficiently explicit on that point Too much particularity might discourage the learner, there

fore, I will next give some hints upon the part of the work next claiming the attention of the grower, and that is

SUCKERING.—About a week after a plant has been topped the suckers will begin to grow. A sucker is only an auxiliary branch which shoots out at the junction of the leaves to the stalk. If not removed, they will grow, and bloom, and ripen seed, and in doing so they will *suck* the parent-stem of much of its vitality. When the crop of suckers are about an inch long they can be pulled or rubbed off, and it should surely be done. In about a week or ten days a second crop of them will appear. These must also be promptly removed, and then the third crop will show itself, which must be similarly treated. The longer they are permitted to remain on the plant, the more they retard its development, and delay its maturity.

WORMING.—This operation is simply to kill the "tobacco-worms." These worms are hatched from eggs deposited by what is called the "tobacco-fly." It is a large, dusky-brown, winged miller, nearly as large as a humming-bird. It lays its eggs on fair evenings and moonlight nights in July and August. It can be seen almost any clear evening, among what are called Jimson-weeds," sucking the flowers. The eggs will hatch out in twenty-four hours, and the worms commence eating when less than half an inch long, and continue to eat till they attain the length of four or five inches. One worm, in six weeks, will destroy a plant so completely as to render it utterly valueless. This pest is vastly more numerous in some seasons than in others. Four years ago there were scarcely any; but for the last three years they have been destructively numerous. The worming of the crop, when they are numerous, is, by far, the most disagreeable and tedious labor attending it. Much of the value of the crop depends upon the care or inattention of performing this part of the work. The crop may have been planted in good time—plowed, hoed, primed, suckered, topped, cut, and cured well; yet it may have been so riddled by worms as to be comparatively good for nothing in market; hence, they must be picked off and destroyed, and that promptly. Having planted in due time, worked, wormed, and suckered properly, the crop begins to show signs of ripeness, and here the question presents itself:

WHEN IS TOBACCO RIPE?—This is, in truth, a simple question, and every one will answer it by saying, when it has arrived at, or attained to, perfection. But the difficulty is, to know certainly when that is—to understand the accompanying indications. To a novice, this *is* a difficult question, and will remain one until he has seen a specimen—a plant of ripe tobacco; then it is plain. As in many other plants, the ripeness of tobacco is known *principally by its color;* and it is no easy matter to describe, with absolute accuracy, any particular shade of color; but there are other signs accompanying, which have reference to the *general appearance* of the plant. With a little judgment and discrimination, the following general rule will be found to answer. I will first observe that, all things favorable, tobacco can be *primed* and *topped* in six or seven weeks after planting; and may be *cut* in as many weeks, after topping, as there are leaves left on the stalk.

When a plant begins to ripen, it will gradually assume a "piebald" or spotted appearance. As the ripening advances the spots will become more distinct and individualized. When the spots can be distinguished at the distance of ten steps, and the leaves of the plant turn down, become stiff to the touch, and their ends curl under, the plant is ripe, and should be cut. From the moment it has arrived at maturity it begins to decay.

CUTTING.—Remember that all the plants in your crop are to be *hung* after they are cut—hung *on* something, and *by* something. Prepare a knife—a butcher-knife answers well—have it sharp—enter it at the top of the plant, where the top was broken off. Enter it centrally; press it downwards, dividing the stalk into two equal portions. Continue it downwards till within five inches of the ground. Withdraw the knife, and cut off the stalk close to the ground. The plant is now cut. Lay it on the ground with the lower end towards the sun. The plants should be placed in rows as they are cut, in order to facilitate the labor of gathering them. There is one caution to be heeded in cutting tobacco, and that is do not let it be burnt or *blistered* by the heat of the sun. In some varieties of tobacco this will be effected in one hour; in others, not so soon. But this danger can be evaded in two ways: first, by cutting late in the evening; second, by throwing it in the shade, or covering it so as to weaken the power of the sun. Some varieties of tobacco will wilt (that is, become soft or limber) in two hours; others, in a longer time, according to the degree of sun-heat. Having cut the tobacco, and it being sufficiently wilted, the next step is

HANGING.—The sticks to hang the plants on should be split of straight-grained timber—should be four and a half feet long, and at least one inch thick, and one inch wide. The splinters should be shaved off smoothly. The poles for the scaffold should be of sufficient length and strength; the forks, or other supporters, must be tall enough to swing the plants six inches above the ground. These scaffolds can be erected around the fields, if small, or in it, if large. Judgment must determine.

The scaffolds erected, the sticks prepared, the tobacco well wilted and placed in piles around the scaffolds, the next business is to hang the plants on the sticks. To do this neatly and expeditiously, place one end of a stick on the outer end of one scaffold-pole, and the other end squarely across on the end of the adjoining pole, or any where else, to be convenient to receive the plants. Hang twelve plants on a stick

and the same, or some uniform number, on every stick. To hang a plant, lift it up with the right hand, and with the left divide the stalk through the split, having half the leaves on one side and half on the other. As the sticks are filled, place them on the poles of the scaffold, crowding them closely. Under the most favorable circumstances, all the plants of a crop will not ripen the same day, or even the same week. It often happens that three weeks intervene between the first and the last cutting. But whenever ripe, it must be cut, hung, and placed on the scaffold, or on some other fixture, to dry out. This *drying* is the first step in the process called CURING THE TOBACCO, which simply means to dry out all the juices of the plant. This can only be done by absorption, assimilation, and evaporation. The two former are natural processes; the latter can be effected by heat, and this heat must be from the sun or from ordinary fire. It is important, for many reasons, that this evaporation be as rapid as possible. Left to the sun alone, it would require, in ordinary seasons, at least three months. I have seen plants of ripe tobacco of a green color in January; and I have seen whole crops perfectly cured by fire in five days. The latter was the plan in Virginia, the fire being kept up night and day during that period. I have not used fire for that purpose since I came to this State, seventeen years ago. But whether here or any where else, if large quantities of freshly cut tobacco be stored in a close house, it will rot or mold during long spells of warm, damp weather, if fire were not used Tobacco well ripened, and timely cut, in ordinary seasons, can be cured by the first of January, without fire, if suffered to remain on the scaffolds a week, and then placed in sheds with open ends and sides; but the roofs should not leak. Rains will not injure it any time during the first eight or ten days after cutting, in any other way than by delaying the process of curing. It may be asked: "Are there any certain signs or indications to show when tobacco is perfectly cured?" I think there are; and with the exercise of a little judgment, there can be no mistake. There should not be the least greenness of color or scent about the stalk, the stem, or any portion of the leaf; and the stems should be so brittle that they will snap short in bending them, in dry weather. With fire it can be put in such a condition in one week; but without fire, in ordinary seasons, it will require till Christmas. But when it is in that condition it is cured. The tobacco being cured, the next process is

STRIPPING.—This consists of breaking the leaves from the stalks, and tying them into bundles, called "hands" in this section. But in doing this we should not tie the leaves as we come to them. In all crops, and sometimes on the same plant, there are some long leaves, some short ones, (equally good in quality,) and some dusty, ragged, weather-beaten leaves. These grades or qualities should not be tied up in the same bundle. In stripping, the practice was, in Virginia, to let one person pull off all of the first grade, and tie it up; another would take the same plants and pull off all leaves of the second grade, and tie it; and another would pull off and tie up what was left on the plant: thus making three grades or qualities. These are re-hung separately, and prized in the hogsheads separately. This is evidently the proper plan to be followed every where.

Every day's stripping is placed on the same sticks again, and hung up out of the way of every thing. The bundles of the first grade contain twelve leaves; of the second, sixteen; and of the third, between twenty and thirty.

After tobacco has begun to dry out, or cure, it can be handled only in moist weather. At any other time it will break and crumble more or less. In order to have it ready to strip at any time, the planter should select a spell of moist weather, and while the tobacco is in the right case, (as it is called in Virginia, and means neither so dry as to break, nor so damp as to mold,) bulk down a considerable portion of his crop.

BULKING DOWN.—Suppose he wishes to bulk down three hundred sticks, making three thousand six hundred plants. The tobacco being in the right "case," he selects a corner of his barn, or other building, and sweeps the floor clean. He then takes down the sticks, slips the plants off, and places them, straight and compact, in one corner of the room, about one foot from either wall, buts outside. And so of another stick by the side of the first, keeping the course parallel with the wall; and when one course is completed, lay down another with the buts on the opposite side. Let the length and number of these courses be such, that the bulk, when completed, will be about three feet high. This done, lay the tobacco-sticks on the bulk lengthwise, and cover over with hay or fodder, pressing it tightly between the wall and the bulk. If this is done rightly, the tobacco will remain in stripping case for years. Suppose your whole crop is stripped and re-hung, which ought to be done by the first of March. Let it hang until about the first of April; then take it down in the proper prizing case, and bulk it away as before. The prizing case for the first and second grades is the same as for stripping; but for the first grade it must be decidedly drier.

PREPARING FOR MARKET.—The crop is now ready to prize for market. Parcels less than one thousand five hundred pounds may be carried to market almost in any way; but more than that should be prized in hogsheads. Several farmers might combine their crops for prizing. As to the size, form, and materials of the hogsheads. In Virginia, the size of the hogsheads is prescribed by law. They must be made of seasoned pine or poplar. They must be four feet six inches long; three feet six inches in diameter, at one end, and three feet four inches at the other. This difference of diameter is to allow the tobacco to be inspected. This may be something new to persons of the North, therefore I will

explain the mode of inspecting tobacco in the hogshead. An inspector is appointed by law to inspect or examine the tobacco prized in hogsheads. His first step is, to place the hogshead big end upward. He then removes the lining, and takes out the head. He next inverts the position of the hogshead, that is, puts the little end up, and raises it entirely from the tobacco. The mass of prized tobacco stands before him without a covering. The outside may be all right, but his sworn duty is to examine it through and through, as well as round and round. For this purpose he drives an iron bar to the middle, near the top of the mass, pries up and takes out a handful of bundles. He repeats that operation on two other points of the mass. He then inspects or examines the parcels extracted, and rates the whole hogshead according to their quality. The hogshead is replaced and made secure. The hogsheads and the samples taken from them bear corresponding marks, and the former is sold by the latter.

The staves of the hogshead must not be wider than five, nor narrower than three inches, five eighths of an inch thick, and dressed on the inside. The heading must be seasoned pine or poplar, and one inch thick, with eight hoops. Such a hogshead will well answer in other States as well as in Virginia.

PRIZING.—Weigh out, say three hundred pounds. It takes two hands to do this work, one inside the hogshead and the other out. One is called the packer, the other the waiter. The packer so arranges the bundles, in placing them, as to make four courses in one layer. Repeat the layers until the three hundred pounds are packed. The weight (lever-power) is then applied. After six hours, put in two hundred pounds more and apply the weight. Six hours, and so on, until one thousand three hundred or one thousand five hundred pounds have been put in. The softer the tobacco, the more of it can be put in a hogshead.

If the tobacco is of the first quality, fifteen hundred pounds is enough. But if lower qualities, eighteen hundred pounds can be put in. The finer the quality the less weight it can bear without injury; and *vice versa*. Having prized the crop, it is ready for market.

I think tobacco is decidedly the most profitable crop raised in the Western and Northern States. For instance, an acre of suitable land, planted in time, with good plants, and promptly attended in its subsequent management, will yield a thousand pounds which, at $4 per hundred, would be $40; at $10 per hundred $100. The article is now selling by the hogshead in Louisville, Ky., at more than $30 per hundred. When the tobacco market opens in May, I have no doubt it will be much higher. Its cultivation is extending most rapidly in Ohio.

No. VII.—BY J. H. NORTON, ONONDAGA COUNTY, N. Y.

THE grand requisites for the successful cultivation of tobacco may be summed up as follows: first, good arable land, plenty of fertilizing materials, buildings for curing and storing the crop, and a good share of patience and assiduity in the grower.

SEED-BED.—A rich loam is the best soil for tobacco-plants; select a spot for a bed on the south side of a gentle elevation—a warm spot—as much sheltered from the winds as possible; make the bed mellow by spading deep, burn a brush-heap upon it, and carefully remove every sod, root, stick, or stone, then rake evenly and carefully. Mix one gill of seed for every ten square yards with a quart or so of clean ashes or plaster, then sow as gardeners sow small seeds, and tramp, where sown, with the feet, or roll with a roller. The bed should be made rich with manure, and sown as early in the spring as the ground can be worked. The ground, however, must be in good condition—not too moist, and be well prepared.

Keep the weeds from growing by careful weeding, daily, after the plants are up; a little liquid manure then applied once a week will be of much benefit to them, increasing their growth and vigor very much.

The plants should not stand too thick in the bed, not more than an inch, to half an inch apart; if they are too thick they should be raked with an iron rake after the plants are about the bigness of a five-cent piece. The rake suitable for such a purpose should be a common rake, with teeth about three inches long, slightly curved at the points, teeth flat, and about a quarter or three eighths of an inch wide, and half an inch apart.

Good, strong corn-land is the soil best adapted for tobacco-growing—not flat, but undulating. New land is preferable to old. The land should be *very richly* manured with good, strong, well-rotted manure—ashes also used will benefit the crop materially.

The ground should be well plowed and pulverized fine by well harrowing or cultivating, and then be marked as for corn in rows from three to three and a half feet apart each way. At each angle formed by the markings a sort of hill should be formed and patted with the hoe once, so as to form a bed for the plant which is to be set.

After the ground is thus prepared, after the first fine rain, the plants (the leaves of which should be about the size of a quarter of a dollar) should be removed from the bed, taking great care not to mash or bruise them while taking them up.

SETTING OUT.—Proceed to planting, which is done in the following manner: a boy with a basket of plants first goes over the ground, dropping a plant

upon each hill formed at the cross-sections of the markings; the "setter" following, takes the plant dropped upon the hill in his left hand, while with the forefinger of his right hand he makes a hole in the ground; he then places the root in the hole with his left, pinching up the dirt to it on each side with the fingers of the right hand, taking care to close the dirt well about the bottom of the root, also being careful that the roots are not bent up, nor set too deep. A stick or dibble is sometimes used instead of the finger for making the holes; in that case care must be taken lest the holes be too deep. A good hand will set ten thousand plants per day.

Cultivation. — Within a week after setting, the hoe should be passed through the rows, the hard crust next the plants removed, and the weeds cut; a little plaster and ashes mixed in equal proportions may also be put upon each hill, say a gill to each. From this time until the plants get so large that a cultivator can not pass between the rows without injuring the plants, the ground should be cultivated often enough to keep the ground mellow and free from weeds. Cultivating is a delicate operation, requiring a skillful plowman and a steady horse, else many of the plants will be knocked over or killed by the operation. After the plants are become too large to be cultivated without injury, they should be *well hoed*, cutting the weeds, leveling the furrows made by the cultivator, and drawing a little earth to the plants when required, and it will need no more working.

Saving Seed.—When the plants blossom, the best should be saved for seed, fifty plants being enough for seed to sow a crop of thirty thousand pounds, or a gill being enough to set four acres of land. All the rest should be topped when the bud is fairly formed.

Topping.—Great judgment is required in this operation. If the plant is sturdy and strong, the top may be taken off at the eighth leaf from the root; if not so strong, the top must be taken off lower down; with new beginners the leaves look too good, and do not top low enough, and as a consequence have poor tobacco; the top when broken off should be thrown between the rows, and suffered to decay.

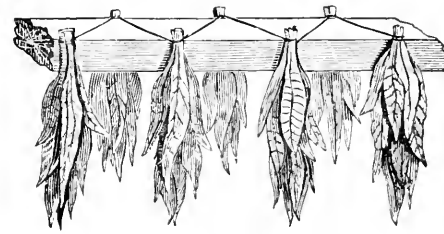
Within about two weeks from topping, the crop is generally fit for cutting, yet it is not hurt by standing longer in the field. From this time until the tobacco is housed, the grower experiences much vexation; storms and frosts may came and destroy the crop.

Worms, the worst enemy of the planter, come in crowds; as fast as they come they should be pulled off, and killed, else they will ruin the crop. A flock of turkeys are of invaluable assistance in destroying these insects, which they seem to do for the "fun of it;" twice in the season these worms appear, and the only proper way to get rid of them is to begin in time, and with plenty of help go over the whole field, plant by plant, breaking up nests, killing such worms as may be found, and doing so morning and evening until they finally disappear.

Suckering.—The plants should also be "suckered." Suckers spring out in great numbers just where the leaves join with the stalk. "Suckering" is done by pinching these off close to the stalk when they reach about the length of three or four inches; just before cutting it would be well to sucker again, for if any are left on the stalk they will grow to great lengths, even after the plant has been hung up for curing.

Cutting and Hanging.—When the plant begins to yellow or turn spotted, it is time to put it away. It is cut off close to the ground, turning up the leaves, and cutting off close to the roots, by a single stroke of a hatchet, or tobacco-knife, made of an old scythe, such as are used in cutting up corn. After cutting, let it lie on the ground a short time to wilt, when it may be handled without danger of tearing the leaves; it is then to be taken to the house to be "hung."

The hanging should be begun on the upper tier of poles, to where the tobacco is elevated by means of a platform and pulley, or it may be passed by boys from tier to tier, to its locality for hanging.



Hanging is done in the following manner: the "hanger" stands in an erect position, having for a a foothold the poles on the tier below the one which he is hanging; he has a ball of tobacco-twine (a twine made of flax, procurable at any seed-store) which for convenience is carried in the bosom of the loose blouse generally worn; he stands with the left side to the pole on which the tobacco is to be hung, left arm over it; the stalk of tobacco is handed to him by a boy whose duty it is to pass it to him; the stalk is then taken in the left hand and placed against the side of the pole, the but projecting an inch or two, around which projection the twine is wound from left to right, (the twine having previously been fastened to the pole;) the next stalk is placed on the other side of the pole, just far enough along so that the leaves of the two stalks will not touch and *pole-horn*, and so continue, the stalks being hung alternately on the sides of the pole, as seen in the above cut.

After the house is filled, some put fires under the crop to hasten its drying, but it is found by experience that the practice is not a good one.

Stripping.—After the tobacco has become dry and well cured, the stem of the leaf being free from sap, the first damp spell of weather it will become soft

and pliant; then it should be taken down and stripped from the stalk. Stripping should be done as soon as possible after the leaf is cured, as the freezing cold of winter may be followed closely by balmy days; and as every mild day causes the stalk to exude juices which discolor the leaf, it is patent that the earlier the tobacco is stripped the better it is.

Stripping is done by holding the but of the stalk in the right hand, so that the different qualities of leaf may be seen, and then with the left hand stripping the leaves from the stalk, keeping the leaves held in the hand until about one third or one half of a pound is thus held. Then wind a leaf about the upper portion of the bundle for about three or four inches of its length, tucking the end of the leaf in the middle of the bundle to confine it. These bundles are called "hands." While stripping, the tobacco should be divided into three qualities, respectively, "first," "second," and "fat," keeping each quality in "hands" by itself. *First* quality tobacco is that composed of the best leaves, being those that are not torn and are not discolored. *Second* quality is that which is or may have been discolored or torn in handling. *Fat* tobacco is that which remains in a wet, sodden state, even after the stems of the large *first* quality leaves have become dry and brittle, being of a dark color—almost black—it is the top leaves of the stalk, which had yet not become ripened. With proper cultivation, the grower need not be bothered with this almost worthless quality.

Bulking.—As fast as stripped, the hands should be laid in piles, the different qualities by themselves; the piles should be formed in double rows, the leaves being straightened before laid down, the buts of the "hands" being outside, the points nearly meeting.

When the piles are carried to a convenient hight, say three or four feet, heavy planks with weights may be laid upon the rows, to keep them in place, and to form a more compact body and assist in the future packing. Here let me say that all the hands that were too damp or soft should be exposed to the sun for a few hours, or else subjected to the action of a fire to dry them, before placing them in the bulk. All the "*fat*" tobacco must be treated in this way before laid in the pile.

While in the "bulk," as we must now call the piled tobacco, much care must be taken lest the pile *heats*; if the slightest warmth is perceptible, the pile must be overhauled and re-bulked in piles of less hight, without weights upon the top; but generally the tobacco will "condition" for packing in a short time, when it will remain without packing without much injury, in the same shape for a long time. If it is not convenient to pack, however, the tobacco had better be "re-bulked" in piles of greater hight, and pressed with heavy weights.

Packing.—In order to pack tobacco, a little machinery is required, as heavy pressure must be brought to bear upon the crop in order to get a reasonable quantity in a box—for all practical purposes, a lever formed of a scantling properly arranged, or better yet, a screw, such as are used for cider-presses or to raise buildings, is all that is required.

The size for boxes differ, but the *best* size is the following: three feet six inches long, two feet four inches wide, two feet six inches in depth, manufactured from planed pine boards, one inch in thickness, with standards two inches square, inside at each corner to nail to.

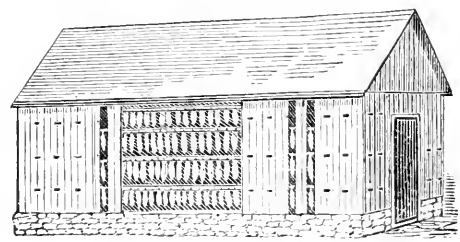
Having thus your boxes prepared, and the tobacco in good condition, the first soft, mild day that comes proceed to packing; the bundles or "hands" of tobacco must be taken from the bulk and laid in courses in the box, laying the buts of the "hands" to the outside of the box, allowing the ends to lap over each other, and endeavoring to keep the center of the box a little higher than the edges—these courses to be packed as solid as possible by the hand.

If any of the bundles are *soft* or have an ill smell, they must be exposed to the fire or sun until sweet and dry before being packed.

When the box is nearly full, a false cover (just large enough to slip inside the box) must be placed on the tobacco, and pressed as heavily as possible with the lever or screw power; remove the pressure and re-fill, pressure finally being applied to the real cover, which may then be tacked down.

A box of the size I have mentioned, when filled, should contain about four hundred pounds of tobacco, and thus packed, will keep for years.

This concludes the labor of preparing this beautiful crop for market. Marketing here has, until of late, been done through commission-houses in New-York; but our crop has so increased in amount that buyers and speculators have thronged the tobacco-houses here during the past season of stripping.

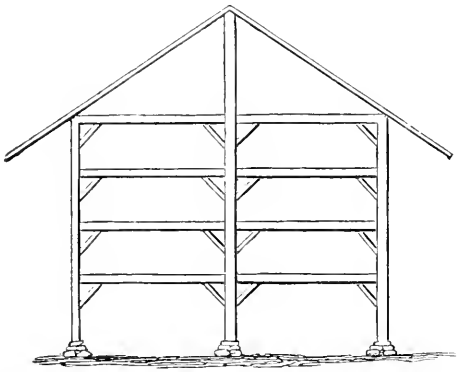


Tobacco-House.

Houses.—A building twenty-four feet square, and seventeen feet high, exclusive of foundation-wall, is of sufficient capacity to store the growth of one acre of tobacco.

The common size of tobacco-houses built with us is about one hundred feet long, by twenty-four feet wide, posts seventeen feet long, and are built upon a wall eighteen inches high; the buildings are framed with girths from bent to bent, for boarding up and down, the bents being twelve feet apart.

The boards for closing up the outside should be a foot wide, and at intervals of about five feet a board should be hung with light strap-hinges, to serve as a ventilator to admit light and dry air, and to exclude wet and dampness, which materially damages the tobacco in color, etc. These ventilators or doors must be closed on frosty nights, but in fair, dry weather should be kept open.



View of a bent of the tobacco-barn, 24 feet wide and 17 feet high, at the sides.

The tobacco-poles, the ends of which rest upon the bents, should be about thirteen feet long, two inches thick, by six inches wide, of some light timber—elm or basswood is used here—and when hung with tobacco should be from eight to ten inches apart.

A large door should be placed at either end for ingress and egress.

The poles, of which there should be four tiers, are laid from bent to bent, resting the ends of the cross-beams in the bent, tiers four feet four inches apart. Such is the method of planting, raising, securing, and fitting for market the tobacco-crop, as practiced by our most successful tobacco-growers. We have personally assisted in the various departments, and know from experience and personal observation that the Onondaga county tobacco-grower is as successful a tobacco-grower as any in Maryland or old Virginia. Two years ago we were down South, and witnessed the modes of planting and raising tobacco as practiced in Maryland; we found that the old practice of "splitting," "spearing," and "pegging" were yet in vogue, resulting in great delay in hanging the tobacco, otherwise the culture and cure are similar to that practiced here.

The raising of tobacco in many parts of Onondaga county is a grand success. Many of our tobacco-growers have raised the past year, notwithstanding the severe drought, over *one ton* to the acre, and the average for the past season is full one ton to the acre. The cost of raising the same is not more than forty dollars per acre. The crop has been bought up by speculators and tobacconists, at prices ranging from fourteeen to seventeen cents per pound, making a net profit to the grower of two hundred and sixty dollars to the acre.

The tobacco grown here is known as the Connecticut seed-leaf, and is relied upon for the main crop. Other varieties are grown. The Spanish Long Leaf and the Yard leaf are good varieties, and the large grower will not fail to plant some of his ground to the numerous varieties.

No. VIII.—BY D. M. HUDSON, HIGHLAND COUNTY, IND.

Seeds and Seed-Bed.—Secure good seed, that will be sure to grow. The variety is not so essential. The Connecticut seed-leaf, or the Golden leaf for segars, and the Cuba or Mason county for chewing, are good varieties.

The seed should be sown the latter part of March, in a bed first prepared by thorough burning, to destroy all seeds of weeds which may be in the ground. It also enriches the soil with the very element most essential to the growth of the plant, to wit, potash; and thereby makes the plants earlier and more thrifty.

The bed should be sheltered from beating rains, and also *partially* from the sun; as this gives the plants a longer stem, and enables them to stand transplanting better by having the roots placed further in the ground. The site for the bed should be selected in as warm a situation as possible. After burning, mix the ashes and the soil thoroughly with a rake or hoe to the depth of three or four inches; after which the seed may be sown—taking great care not to sow too thickly. A large-sized thimbleful is enough to sow a bed four feet square, which will produce plants enough to plant an acre. Stock should not be allowed to tramp the beds; and if weeds come in them, they should be pulled out.

The Preparation of the Ground.—Select dry upland, the richer the better. First give it a good coat of stable-manure, with as much ashes as convenient, which should be plowed under in March; the deeper the better. Subsoiling will not hurt it. Surface-plow the ground again the last of May, throwing into ridges three and a half feet apart for transplanting.

Take up the plants with a small lump of dirt to each, and plant three feet apart on the ridges while the ground is moist or wet. It may be done when the ground is dry, if the plants be watered immediately afterward.

The tobacco should be *well* cultivated while small. This may be done with the plow and the hoe, until the leaves are too large for plowing; after which it must be done exclusively with the hoe.

Worms.— About the first to the fifteenth of July the worms will make their appearance. Have ready an over-gown, made after the fashion of a shirt, extending to the knees or below, which will keep the gum off the clothes. A pair of gloves also will be handy, and save a great deal of hard washing to keep the hands clean. — From the time the worms begin, until it is harvested, it will be necessary to look it over carefully twice a week, perhaps oftener, and kill all the worms that can be found. Also destroy the eggs, which will generally be found on the under side of the leaf and near the edge. And, when possible, kill the flies that lay the eggs. They are about half as large as a humming-bird; they will be seen flying through the tobacco, from plant to plant, about sun-down.

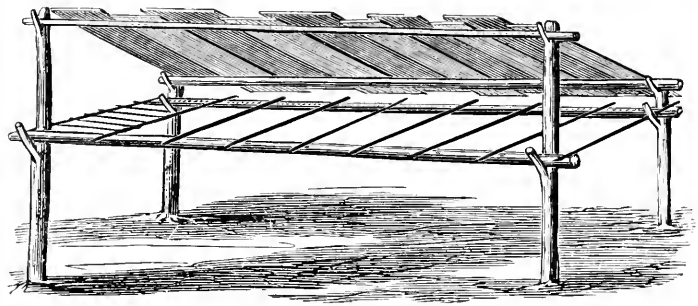
Topping.— The tobacco should be topped as soon as possible, and not allowed to run up to unnecessary hight. As soon as a sufficient number of leaves can be counted, large and small, the small leaves at the top should be carefully parted and the bud pinched out, leaving the required number. At the first topping, leave twelve leaves, and two less each successive week thereafter, until all is topped. Great care is necessary that the small leaves at the top be not injured or broken while topping. The lower leaves should not be pulled off, as is often done. They will sell for half-price, and they do not injure the plant as much as the wound left by pulling them off.

Suckering. — Soon after the tobacco is topped, sprouts will start at all parts of the stalk. Care is necessary that these be all pulled off; and to keep them off well, it will be best to look it over two or three times every week. This and worming will occupy the time until it is ready for harvesting; and *on the attention paid this part of the work will depend, in a great measure, the quantity and quality of the tobacco.* The ground should be kept in good order by an occasional hoeing.

Cutting and Hanging.—Before the tobacco is ready for harvesting, there should be prepared a supply of sticks for hanging. Sticks four feet long and an inch square are most convenient. Twelve sticks to every hundred plants will be sufficient.

For sun-curing, there should be a shed built at one or more convenient points of the patch. This may be done by placing posts in the ground to support the poles, as represented in the engraving. The poles *a a* being for the support of the smaller poles, *c c*, etc., upon which the tobacco-sticks are placed, and *b b* for the cover, when necessary that it should be shedded.

Every thing being ready, the tobacco should be cut as soon as it is sufficiently ripe. This can be told by the color. The leaf will change from a green color to a pale yellow, with spots. Or it can be tried by taking the leaf doubled between the fingers; if ripe, it will break readily. When ripe, split the stalk from the top to within six inches of the ground and cut it off.



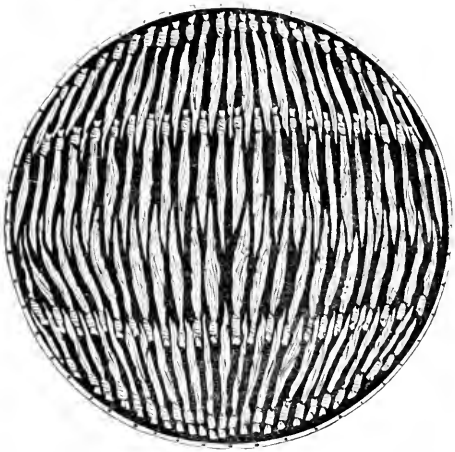
It should now be left on the ground till well wilted; (though if the sun be hot it should be closely watched or it will burn;) after which, it may be taken to the shed and hung — the stalks being placed on the sticks, six inches apart, and the sticks on the scaffold, as close as convenient.

Now, while curing, it demands *close* attention. It may remain in the position in which it was hung for a few days — until it begins to turn a light yellow; after which it should be frequently handled — exposing one side to the sun a few days, and then the other, alternately. It should now be parted also, so as to admit the rays of the sun and the air freely through it. It is best to shed it from rains and heavy dews, but expose it at all other times. *The sun will not hurt it.*

As soon as it is well cured, the stem of the leaf next the stalk will break, if strained while dry; when the tobacco may be taken off of the sticks, (while in proper case,) and bulked down in a damp situation — a dry cellar is suitable. It should be bulked *while in as low case as convenient*, if it will bear handling without breaking. *If in too high case, it will be liable to mold.* If properly bulked, with the tops of the stalks in the center, and then well covered to exclude the air, it will remain in case as long as desired, and may be handled when convenient.

To prepare for market, the leaves are stripped from the stalk and assorted into three classes, (though it is customary to sell in some markets without dividing.) The upper and middle leaves, when of a good quality and of a *bright* yellow cure, constituting the first rate; the same leaves, when inferior, the second rate; and the ground-leaves the third rate. Several years ago the dark tobacco was preferable, owing to its greater strength, when it was customary to bulk while curing, to change the color; but now, the light yellow finds the readier sale. When assorted, it is tied up in ties of seven to ten leaves each; keeping each class separate.

It is now ready to be pressed into the hogshead. For this purpose a hole may be morticed in a tree, in



which the end of a lever is inserted — passing over the hogshead and working by a tree or post, in which should be pins at intervals of eight or ten inches, by which a small lever may be used to force the first lever down on the tobacco. Fifty to a hundred pounds may be placed in the hogshead and firmly pressed a few hours, and as much added again, and so on.

The accompanying figure will serve to represent the manner in which the hands (or ties) may be placed in the hogshead—filling the middle first, then the outer edges—placing the tops toward the center, and the buts in the direction of *a a*, for the first layer. The second will be placed the same, only the buts will be in the position of *b b*, the third at *c c*, etc., observing to keep the center and edges full.

In conclusion, *the two most essential items in tobacco-culture are, first, a good body, and secondly, a good bright cure.* The first is secured by *rich ground with plenty of manure.* The second by *free exposure to the sun and air,* and exclusion from *rain* and *damp weather.*

No. IX.—BY PERRY N. HULL, LITCHFIELD COUNTY, CONN.

The cultivator of tobacco needs, 1st. A rich, warm, finely pulverized soil; 2d. Strong early plants. The failure to obtain either of these at the outset, will very seriously endanger the success of the crop. Here in Connecticut, it usually requires the whole season for the crop to arrive at the proper state of maturity, without which its value is greatly diminished. Even though harvested no more than one week before maturity, the danger while curing is greatly increased, and if, through very favorable weather, the tobacco escapes total ruin by pole-burn, its value will still be diminished one fourth by bad colors, etc.

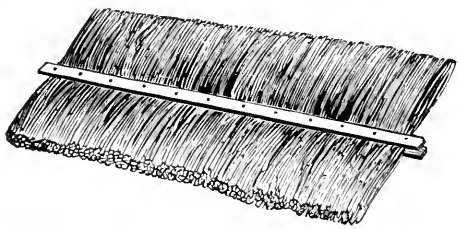
Seed-Beds.—Select a light garden soil, in a location sheltered from north winds, but exposed to the sun from morning until evening, and prepare in October. The best manure for plant-beds is that taken from the hog-pen, kept in a heap through the summer, and occasionally cut over with a shovel, that it may be thoroughly rotted. Such manure contains fewer weed-seeds than almost any other, and its fertilizing qualities can not be surpassed. This should be generously applied—say scatter the ground over one, or one and one half inches deep, and thoroughly spade in, in the month indicated. The seed should be selected from an early, strong growing plant, which should, after ripening, be cut up and hung in a dry place, top downwards; the seed, if out of the reach of mice, keeping in this way much better and safer than if picked and shelled.

Varieties.—There are almost as many varieties of seed-leaf tobacco as there are of Indian corn—the difference not always noticed by the inexperienced, but very readily by the experienced cultivator. In my opinion, the variety best adapted to our purpose, is that known in this State as the Bull Tongue. The leaf is neither too long nor too short, the length and width being in such good proportion that manufacturers consider there is less waste than there is to a very long, narrow leaf, or a very broad, short leaf. It yields well, and ripens at least one week earlier than many of the broader varieties. Almost any of the seed-leaf varieties will do well; but never patronize any of the humbugs sent from the Patent-Office, under the name of Graham Tobacco, Maryland Broad-Leaf, etc. They are a Southern tobacco, and when grown upon that soil, make chewing-tobacco; but here it is good for nothing for that purpose, and is too coarse for segar-wrappers.

Many are too anxious in the spring to get their seed into the ground, to be successful in getting good plants; as often, after waiting two or three weeks for the plants to come up, they have to make a second sowing, thereby putting them back a week or more. Wait until the ground is dry, and warm enough for the seed to grow, instead of rotting. When this change has taken place in the soil, sprout the seed, instead of sowing dry, thus gaining at least ten days' time, and precluding the possibility of being disappointed in the first sowing. From the first to the middle of April, (being governed by the forwardness of warm weather,) procure some rotten wood, so rotten that it may be finely pulverized with the hand; mix this with the seed, in about the proportion of ten parts of wood or dirt to one of seed. Mix them thoroughly, and moisten with water slightly warmed, and repeat it as often as it dries up, and keep it in a warm room. The seed will usually get in the proper condition for sowing in from four to six days, depending

upon the temperature at which it is kept. The seed is sprouted sufficiently, whenever, upon disturbing the dirt, it looks silvery inside.

The beds should be well worked over with the fork or spade and rake. If the soil is inclined to be moist, raise the beds well; if dry, raise them less. They should be only about three feet wide, to facilitate weeding. After making the top of the beds perfectly smooth and fine, sow the seed, first mixing enough ground plaster to thoroughly dry the seed and prevent them from falling in bunches. The quantity of seed sown should be about one half a table-spoonful to thirty-six or forty square feet of ground. *Do not rake in the seed*, but procure a smooth board, lay it on the bed, and with the feet stamp the beds quite hard. The ground should never be allowed to freeze after sowing the seed; to prevent this, and also for another purpose, which will soon be apparent, construct a straw mat, like that represented in the engraving.



These I decidedly prefer to those described in the February AGRICULTURIST, being much lighter to handle, more easily made, and sufficiently strong to last one season, which is all that could be expected of the other. They are made by laying a scantling (six feet long, one and a half inches wide, three fourths of an inch thick) upon the barn floor; place a layer of good straight rye-straw upon it, so that the scantling will come about in the middle of the straw, then another layer with the tips the other way, that it may be of uniform thickness in all its parts, (about one and a half inches thick.) Place a similar scantling exactly over it, and with sixpenny nails, nail them tight; with an ax trim both edges straight, and to a width of three feet, and the mat is made. With these the beds should be covered *every night*, cold or warm; in the day-time they should be set up at the north side of the bed, at an angle of about sixty-five degrees, by driving crotches just inside of the bed, for the end of the scantling to rest in, the lower edge of the mat resting on the ground, outside the bed.

The plants, as soon as they are out of the ground, which will be in a few days, require strict attention. The beds should be made high enough, so that in fair weather a little water can be applied every night. After the fourth leaf appears, manure-water should be used. Place an old barrel near the beds, and throw into it one half-bushel of hen-manure, and fill with water; after it is well soaked, use one half-pailful of it, and fill up with clear water with the chill taken off. As the plants get larger, the strength of the decoction can be increased, being careful that it is not so strong as to turn the plants yellow. As soon as the plants are large enough to be readily taken hold of by the thumb and point of a knife, they should be thinned to about one hundred and forty-four per square foot, and kept free from weeds. This plan is decidedly preferable to raising under glass. It is less expensive, the plants are more hardy to plant out in the field, are got full as early, and a little carelessness in a hot day will not ruin the whole. It has been my method for the past eight years, and during that time I have never failed to have good, strong plants ready for the field from the fifth to the tenth of June.

PREPARATION OF THE SOIL. — Tobacco requires a light, rich soil, in a locality not exposed to early frosts. If the soil is not naturally rich enough, it must be made so by a generous application of manure; and he who is unwilling to "feed his barn-yard," and spend both money and time to increase the manure-heap, had better not attempt the cultivation of tobacco—at least not largely. It has been, and still is the practice of many farmers in the Connecticut valley, and to some extent here in the Housatonic valley, to plant one and the same piece of land with tobacco year after year for an indefinite period, because, as they say: "Tobacco impoverishes the soil, and they confine it to a single piece, rather than have its injurious effects upon all parts of the farm." It seems as if almost any practical farmer would discover the fallacy of such reasoning, for these same farmers carry all, or nearly all their manure, upon this one piece, year after year, leaving the remaining part of the farm to take care of itself as best it may, which in my opinion is the surest way to impoverish a farm which a farmer could take. Besides, it will take almost as much again manure per acre to raise a crop in this way, as it will where tobacco is grown as one in a rotation of crops, and a new piece of land taken for it every year. This was the idea that I started with when I commenced growing tobacco, ten years ago. I have cultivated from four to six acres yearly ever since, without ever more than once or twice planting the same piece of land two years in succession. This distributes the manure over a great portion of the farm, thus keeping the whole in a good state of cultivation.

The turf should be turned over in September or first of October, only three or four inches deep, plowing the manure in with it, which should be well rotted by being kept over the summer, under the sheds and barns, or, which is better yet, in a heap in the field, composted with swamp-muck. In the month of May, the field should be worked over with the plow and harrow, until thoroughly pulverized. If there have been from twenty to forty loads of manure applied to the acre, according to the natural condition of the soil, no further manuring will be necessary; the hills can be made with a hoe, and the field be ready to receive the plants. If some special fertilizer is to be

used, my method is this. Take a horse-plow and mark out the rows, three feet four inches apart, making a shallow furrow, say two inches deep; scatter the manure, if guano, two hundred pounds to the acre—if superphosphate of lime, three hundred and fifty pounds per acre—evenly the whole length of the furrows; then make the hills with a hoe, from two feet to two feet six inches apart, raising them somewhat above the level of the ground, at the same time covering the intervening part of the furrow. The object of thus scattering the fertilizer, instead of dropping it all immediately in the hill, is this, that the roots, reaching it gradually, its effects will be felt throughout the whole season; whereas, if it is all dropped in the hill, its power would soon be spent. I am aware that some practice and recommend ridging ground before planting out, but I consider the above practice better for this reason: where the ground is thrown into ridges beforehand, a plow can not be used in the after-cultivation, or it will leave the ridges too high; consequently the cultivation must all be done with the hoe, which, I believe, is the practice of those who ridge. On the other hand, a light plowing at each hoeing greatly reduces the labor, and also raises the ridges to a sufficient hight. All this preparation should be accomplished just before the plants attain sufficient size, that there may be no hindrances, and all hands may be engaged in

Planting Out.—When wet, lowery weather comes, from the first to the middle of June, take the plants carefully from the beds with a garden-trowel, digging deep enough to secure all the roots, and transfer them carefully to the field. In planting them, see that every man puts the roots well into the ground, and leaves a little disk around each plant, to hold a half-pint of water, in case dry, hot weather follows. In many seasons we do not get the wet weather, but it is not best to delay later than the twelfth or fifteenth of June. One wagon or cart-load of burdock leaves, or brakes, will nearly cover the plants upon an acre, and I have often thought that plants put out in dry, hot weather, watered and lightly covered from the sun for a few days, started to grow sooner and better than those set out in wet weather, and not covered. When the field is once planted, it needs but little care for a while, unless the black corn-worm attacks it; in that case—and they are too plenty—it is best to catch them off, and often reset, or fill out the field, that the plants may start as near alike, and the field be as even as possible. It should be hoed as often as necessary, until all weeds are thoroughly subdued.

Worms.—The tobacco-worm usually makes its appearance about the first of August. Our tobacco being raised for wrappers to segars, the necessity for keeping the leaves as sound as possible, is at once seen; for no matter of how fine a texture a leaf may be, if badly eaten by the worms, it must go into the lower grades, and sell for a small price After the worms make their appearance, the tobacco should be gone through, as often as twice a week, and the worms destroyed, large and small.

Topping.—The top or seed-bud, will generally make its appearance from the first to the tenth of August; as soon as developed enough to be got hold of conveniently, it must be pinched off. The exact point for topping, must be determined to a great extent by the cultivator. Some fields of tobacco will mature a plant of eighteen leaves, while others will not more than twelve; depending upon how forward the crop is, and the strength of the ground. The above numbers are the two extremes, from fourteen to sixteen leaves are usually left to the stalk when topped from first to fourth of August, from the fifth to the tenth, leave from twelve to fourteen.

Suckers.—After the top is taken off, the suckers will start, one from the base of each leaf, those at the top making their appearance first, then downwards in succession. These must be taken off as fast as they get large enough to be got hold of, otherwise a great amount of growth is lost, and consequently the maturity of the plant retarded. As the plant approaches maturity, great care should be exercised in going through, and handling, as the leaves are daily growing brittle, and are liable to be broken off and torn by careless hands. Turn back to their natural position all leaves turned up by the wind, or the sun shining upon the under side of the leaf, will soon burn it, and very seriously injure the color.

Harvesting the Crop.—This is an important season, and generally commences about the first of September. Before cutting any, see that the drying-sheds are fully prepared with poles and scaffolds; the twine examined for rotten places, etc. The best convenience for transporting it from the field to the shed, is the simplest. If a cart is to be used, remove the body, and with two poles, construct one without sides, only bottom and ends. If horses are to be used, use trucks, the wheels of which will be entirely out of the way. With either of these, the plants can be loaded crosswise with the butts out, and tips lapping in the middle; being careful in loading to lay a tier across one side, then the other, regularly, that it may be taken off without any pulling or tearing of the leaves. In this way four or five hundred plants may be carried at a load.

A very little experience will teach one to determine the proper time for cutting When about ripe, the color changes from a dark green to a spotted appearance; the under side of the leaf, when pinched between the thumb and finger, will crack; the suckers commence to put out, below the bottom leaves, and the plant presents an entirely different appearance from what it previously did. There is decidedly less danger of tobacco getting *too ripe* than there is of its being cut too soon; many a crop being seriously injured by being harvested before perfectly mature

The plant should never be cut while the dew is on the leaves; but wait until it is off, say ten o'clock, and what tobacco is cut from that time until two o'clock, if the day is hot, will need close attention. In short, the whole operation, from cutting in the field, to the hanging upon the poles in the barn, needs care, as a little carelessness or inattention will damage many dollars' worth. No hand should be allowed to handle it, who is unwilling to use care, and perform every operation just as directed, or else by breaking of leaves, or sticking fingers through them, etc., he may do more damage than his wages amount to. The plant to be cut should be taken by the left hand, not carelessly by the leaves, but carefully by the stalk, and as carefully leaned over, to give a chance to use the ax, which should have a handle about one foot long. Cut the plant with one blow, laying it carefully down, with the top to the sun; if it is laid otherwise, the leaf will burn before the main stalk of the leaf will wilt sufficiently to admit of handling. Even in that position, it may burn unless attended to, but not as soon. After lying until pretty well wilted, and before burning, turn it over and wilt the other side. When so wilted that the main stem has lost most of its brittleness, load as explained above; taking hold of the but of the stalk, lay them carefully upon the arm, and again as carefully upon the load. If the day be very hot, use expedition in getting to the shed, else, if the distance be great, the load may heat, which will spoil the leaves for any thing but fillers

When carried into the shed, if quite warm, they should be left only one plant deep upon the floor and scaffolds. If the day be cool, and they are to be hung up soon, they may lie much thicker. They should never be hung upon a pole less than five inches in width. If sawed pieces are used, saw them just that; if poles are used, see that they are about that; for if any thing of less width is used, the plants will hang so close, that the chances of *pole-burn* are greatly increased They are fastened to the pole by a half hitch. [Their position is represented by Fig. on p. 27.]

It requires two hands to hang them, one to hand them, another to tie them. The poles should be about eighteen inches apart, and the number hung upon a twelve-foot pole will depend upon the size, from twenty-four to thirty, so regulating them, that when thoroughly wilted, they will scarcely touch each other If hung thicker than this, a little unfavorable weather will cause more or less pole-burn, sweat and mould. After the tobacco is hung, the building should be so thoroughly ventilated that there will be a circulation of air through every part. The ventilators should be kept open during all fair weather, until well cured down. During storms, shut the doors and exclude as much wet as possible; being cautious to give it a thorough ventilation again, as soon as the rain ceases. When it is cured enough to be husky in dry weather, exclude all hard winds, that will crack and damage the leaves. When the leaves are so much cured, that there is nothing about them green but the stem, a moderate quantity of wet weather will not injure it, but rather improve the color; as the sap of the stalk works through the stems into the leaves, during moist weather until the stalk has been well frozen; after this takes place, the tobacco should be picked.

PICKING.—Tobacco, as a general thing, should not be picked until about December; at least not until the *fat stems* (main stems of the leaves, which are not thoroughly cured at the but-end) have mostly or all disappeared, which they will have done by that time, if the crop reached maturity before harvesting. The operations of picking and assorting are by many, who make only two classes or qualities of the tobacco, carried on at the same time. By far the preferable way is, especially if there is a very large crop to pick, to take off the leaves during damp or wet weather, tie them into bundles of fifteen or twenty pounds, with twine, and pack it away into cellars, or wherever it can be kept without drying up. It can then be assorted in any kind of weather, thus gaining considerable time, as two will pick and tie up in this way as much during one wet spell as *six* hands would, assorting and hanking up, at the same time. Another reason why the last practice is preferable, is, that, by the former, the assorting can be but indifferently done; whereas, by the last, it can be done as carefully as desired Tobacco should not be allowed to get too wet before picking; in fact, should not be allowed to get *wet* at all, so as to feel *wet*, only just damp enough to make the leaves pliable, so as to handle and pack without breaking or feeling husky. If allowed to get *wet*, before picking, it is next to impossible to get it dried to the proper state again uniformly, so but that some of the leaves will still be too wet, while others will be dry enough to crack and break. So if the rains are long enough to get it too wet, which they often are, by all means let it remain upon the poles until the next wet spell.

ASSORTING.—Tobacco, to sell well, should be assorted into *three* classes or grades, Wrappers, Seconds, and Fillers. The wrappers will include the soundest, best-colored leaves, the color (a dark cinnamon) should be as uniform as possible; this quality should include nothing but what is fit for wrappers. The Seconds, which are used as binders for segars, etc., will include the small top leaves, of which, if the tobacco was topped too high, there will be one or two to each plant—the bad colors, and those leaves somewhat damaged by worms and bad handling, but not so much so as to be ragged. The third class, or Fillers, will include the balance of the crop, bottom leaves, ragged leaves, etc. The tobacco should be done up into hanks of about one third of a pound each, or about what can be encompassed by the thumb and fingers, winding at the but with a pliable leaf, drawing the end through the hank to secure it.

After assorting, it should be corded up awhile, in a dry place, that the buts may be thoroughly cured before packing in the cases. The pile is made with the buts out, and tips interlapping in the middle, at every other course, at the ends turning the buts toward the end. Get upon the pile upon the knees, take hold of the but of a hank with one hand, drawing the leaves at the tip together with the other, and placing it upon the pile in that position, immediately putting the knee upon it. After the pile is finished, it should be covered over with boards, to keep it from drying up, and a few days before packing into the cases, should be well weighted down, which will save a great deal of pressing at that time. Such a pile should be made only about two and a half feet or three feet high, and then closely watched to prevent a premature sweat, which often, if the weather be mild, will take place in such a pile, which will not be sufficient to render the tobacco fit for working, but which, if not intercepted at the commencement, will be sufficient to prevent a proper sweat afterwards. Check, therefore, the first symptoms of heat in such a pile, by opening the pile, and repacking it, shaking out the hanks and giving them time to cool off.

Packing.—The cases are made of cheap pine lumber, three feet eight inches long by two feet six inches wide and high, outside measurement; they should be made tight and strong; there should be corner-pieces nailed in one and a half inch square, nailing to them well from both ways. The tobacco is packed in, with the buts towards each end; taking hold of the but with one hand, the tip with the other, and giving the hank a slight twist, lay it in the case in that position. A lever or screw can be used to do the pressing, whichever is the most convenient. From 360 pounds to 380, is the proper weight for packing; though if the tobacco is very dry, 400 pounds will probably not sweat too hard; and if quite wet, (which it never should be,) 350 may.

After being packed, the tobacco should never be kept in a damp cellar; a good tight barn or other outbuilding, where the cases can stand on a floor, is the best place. The crop usually passes from the hands of growers, into those of speculators and dealers, before the sweating season. The first symptoms of sweating appear about as soon as settled warm weather comes, usually the fore part of May; it then commences to grow warm, and *wet* to appearance, which increases for about three weeks, when it reaches its culminating point and commences to cool off. One unaccustomed to the crop, upon examining it at this period, would be sure to think it was rotting, but if not too damp when packed, there is no danger. Sometimes, if a case is known to be too wet, the lids can be started, to give a little vent to the steam and gases which are generated, and this is about all that can be done for it; and it is far safer to see that the proper condition is secured before packing, than to do even this. The weight will commence to decrease about as soon as the heat commences, and it has been ascertained by weighing at the various stages, that more than half of the shrinkage is accomplished by the time that the sweat has reached its culminating point. About ten per cent is allowed for the shrinkage of a crop, in just the right state when packed; if wetter, it will shrink as high as twelve or thirteen per cent, and if very dry, it may shrink less than ten per cent.

The different grades usually bring about the following prices: Wrappers, fourteen cents per pound; Seconds, seven or eight cents; Fillers, three to four cents. The proportion of the different grades in a good crop should be, Wrappers, three fifths, and Seconds and Fillers, each one fifth.

No. X.—BY E. H. DENNIS, WAYNE COUNTY, IND.

An intimate, practical acquaintance with the method of raising tobacco in the rich lands bordering on the rivers in Missouri, and having myself grown the crop there, will, I hope, enable me to give such information as may be valuable to those of less experience.

Selection of Seed depends upon the kind of land you have and the quality of tobacco you wish to raise. Rich, fertile bottom-lands will grow only heavy, strong tobacco, and it is the interest of the farmer to select that kind of seed that will produce the plant of the greatest weight; in other words, to make *weight* the prominent object in the result of the crop. Thinner, poorer land will produce tobacco of lighter weight, but of finer and more desirable quality, and one that will bring a correspondingly higher price. The "Orinoco" tobacco is raised extensively in Missouri and Kentucky for heavy tobacco, and is known in market as "Kentucky Leaf." The seed for the finer qualities passes (as does the other also) under different names, but may be procured in Pike and Calloway counties, Missouri, and in Virginia; the "Orinoco," and kindred kinds, in Howard and Chariton counties in Missouri. I should suggest that the seed may be procured through the agents of express-companies at Glasgow, Brunswick, and Renick for the "Orinoco," and at Louisiana or Fulton for the other qualities. I would recommend the culture of the coarser, heavier kinds, for the reason that the finer quality needs much more care and experience in the handling, in order that it may go into market in a condition to command such a price as its quality, when well handled, entitles it to.

The Plant-Bed should be made the first day after

Christmas, when you find the surface of the ground without frost or snow, and dry enough to work. In the edge of the timber, on the south side of a piece of woodland, select a spot where but little or no grass has grown; cut down the trees and open around it so that the sun will have full power in the bed most of the day; a spot (about fifty feet square for each ten acres of ground to be planted) should then be cleared entirely of roots, stones, and trash of every description — raked off thoroughly; when this is done, haul on dry brush, tree-tops, small dry logs, any thing that will burn freely, and make a brush-heap all over it, set it on fire, and as it burns, by means of long poles, move the fire and logs about until you have burned the whole surface of the ground of your bed to the depth of one or two inches. This destroys all the roots and seeds of grass, weeds, etc., which may be in the soil, and which would, if suffered to grow, interfere with the young plants. When your bed is thoroughly burned over, and as soon as it is done, rake off the brands, ashes, etc., so as to leave it perfectly smooth, and with a mattock or hoe dig up the surface only an inch or two in depth, with a view to pulverize the soil finely to that depth, which may be done with a garden-rake. When you have prepared the ground, take a table-spoonful of seed for each twenty-five feet square and mix with a pint of dry sifted ashes — a small tin pan is convenient to hold the seed — and having laid your bed off into "lands" about three feet wide, to guide you in sowing, sow your seed by taking a "pinch" at a time and go carefully over the bed; sow the mixture so as to have a surplus rather than a deficiency. The surplus may be scattered afterward, but a deficiency would indicate the seed sown too thick, while a part of the bed would remain without seed. Rake the bed, after sowing, with a garden-rake, and then with your feet, or a small, heavy roller, go over it and tramp or roll the earth down hard; build a fence around it to protect it from stock, and if there should be lack of rain, water it. The seeds will come up in about six weeks from the time of planting, if the weather is open and warm. The bed should be kept covered with brush, after the plants come up, while there is danger of frost.

The Preparation of Sticks should engage attention in the spring, before plowing-time comes. They should be riven out of ash, hickory, or white-oak timber, perfectly straight, about three fourths by one inch, and four feet long; the corners should be trimmed off. You will need about four hundred sticks for each acre of tobacco. The best and most convenient

Tobacco-Barn for the farmer is a square barn, built twenty feet high from the ground with round logs, and roofed; then a shed built all around it as wide as may be allowable to give the roof enough "pitch" to shed rain, with "stories" of plates three feet apart throughout, upon which scaffolds may be arranged with poles on which to hang the tobacco. The outside of the shed should be inclosed from the top, say half-way down; this will insure a free circulation of air and prevent the rain driving in and injuring the tobacco.

The Ground.—In hemp-growing countries tobacco is almost invariably planted in *new* ground, which is cleared each year, so as to be added in due time to the hemp-fields. The late summer culture and the thorough weeding effectually kills all the weeds. Good bottom grass or other rich sod-ground, or such other ground as it is intended to plant, should be broken up early enough so that the sod shall have time to rot. When your plants begin to grow, and the leaves are as large as five-cent pieces, you should cross-plow your ground and prepare for setting out your crop. In this, as in all other crops, a good preparation of soil is desirable, and any mode that will pulverize the soil and tear the sods to pieces will answer your purpose When this is done, take a two-horse plow and throw three furrows together, so that the summit of the ridges shall be three feet apart, or three and a half if you prefer to plant it wider. These summits should be as near straight as possible—perfectly straight rows of tobacco are much easier cultivated; the rows should then be checked across, for which purpose I have found it practicable to attach a light log-chain to a small rope, and tie the rope around the waist of a man; set a row of small stakes across the field and let him walk across, dragging the chain behind him, in exact range of the stakes, and as he comes to each one, let him set it over by a measure he carries in his hand, so that as he returns, the stakes will all be in range in the new row. This will check the summit of the ridges and leave them in good condition for setting out the young plants. The old Virginia tobacco-planters mark off the ground each way and make a hill with a hoe, very carefully preserving their lines, and making every thing smooth. The laying off of the ground should be done as nearly as possible immediately previous to setting out the plants, so that during the time the plants are getting started after transplanting, the weeds shall not get the start of them. After the ridges are made, the cross-checking may be delayed until you commence transplanting.

Setting out the Crop should commence from the fifteenth to twentieth of May, if your plants have done well — at least it is not best to risk the loss of a good season at that time unless there is danger of frost. As soon, therefore, after May 20th as it is safe to do so, and when the ground is well saturated with rain, commence drawing the largest plants from your bed and setting them out. The leaves on the plants should be as large as a quarter of a dollar, or larger. Let one take a basket of plants, and, crossing the ridges, drop a plant at each check; another, with a pointed stick to make holes with in one hand and a plant in the other, follow the dropper. As he reaches a hill his stick and plant are both ready, and the plant is quickly set, and as he raises up he picks up the plant dropped at that

place, and by the time the step is made he has it ready to plant, and so on; care should be taken not to leave dirt so that it will wash down and cover up the plant. When a good season occurs, and the plants are ready, the whole force of the farm should be applied to the setting out. If the sun comes out hot, lay a small clod or sod on the plant after setting out, which should be removed after the sun declines. The crop should then be set out as the plants grow and the rains suit, so as to be all planted by the 20th of June; and at each planting the ground previously planted should be gone over carefully to replant such as may be missing.

Working the Crop should commence as soon as the plant "takes root" and begins to grow; first with the hoe to clean out the hill, and afterwards with a plow or cultivator, and it will be found desirable to keep one or the other going, with hoes enough to keep up with it, until the plants are a foot high. About this time, or when about fourteen to sixteen leaves are fully developed on the plant, it is to be "primed" and "topped." The "priming" consists in removing from the stalk the bottom leaves which have been bruised in cultivation, or become dirty and rusty from lying on the ground. These are taken off up to where the leaves are sound and whole. Then count by twos upward, and as your land may be stony or otherwise, leave from eight to twelve leaves to the plant, and pinch off the bud at the top. This is "topping" it. Good land will not generally mature over ten leaves to the plant unless it is *very* good. Now commences the busy time with the crop. Having pinched off the bud and stopped the upward growth of the plant, it will try to evade a legitimate spreading out through the leaf by "suckers," which will start out at the base of each stem and grow as though they were anxious to get to a safe size to defy you before you detect them. These must be kept pulled off closely, and while you are busy with them, you will come to a plant that the leaves have been eaten full of holes — all fresh as though something had enjoyed the business; turn up the leaves one by one, and lying close to one, in some quiet corner alongside the stem, you will find a dainty-looking green worm about the size of your middle finger. It is the gentleman who has done all your mischief, and who will require your thorough inspection of every plant as often as every four or five days to prevent his making inconvenient inroads upon the result of your labors. When little negroes are employed in this branch of the business, they are sometimes told they will have to bite off the heads of all the worms they leave. Plowing should be continued while the size of the plant renders it possible to do so with safety, and when the plant is wilted in the middle of the day; it may be done even after the leaves cover the space between the rows. The later part of the season is regarded most favorable for "making weight," and the cold dewy nights of latter August and early September are accounted profitable to the tobacco-raiser.

Cutting Tobacco should commence when the plants in any favored part of the field begin to turn yellow or mottled, and indicate maturity. Generally, a few hundred hills begin to mature together, and become fit for the knife at the same time. Take a short butcher-knife, (sharp,) and standing over the plant, split the stalk right down through the middle, stopping before you get to the lower leaves; then take out your knife and cut off the stalk below the lower leaves, and take the stalk at the bottom, turn the plant bottom side up, and stand it on its top. It is a short job. Let it so stand until it wilts. If it is a hot day, and the sun's rays are powerful, it will scorch if it lies too long. Have some long poles, of convenient size to handle, previously prepared and on the ground, and forks, so that you may build a scaffold three and a half or four feet high. One end or corner will commonly rest on a stump or on the fence. Having arranged your poles, lay smaller poles or rails across, and thus form a frame, across which your tobacco-sticks will reach. Have the tobacco-plants thus wilted carried to the scaffold carefully, so as not to bruise them, and piled convenient to the "hanger," who will take the plants and hang them on the tobacco-sticks, top down, by means of the split made in the top of the stalk while cutting. About ten plants are put on a stick, at regular distances apart, and the sticks are then placed on the scaffold, so that each plant may not press closely against any other plant, nor touch the ground. This process is applicable to the cutting of the entire crop. The plants on the scaffold should be protected from the direct rays of the sun on the sides, to prevent scorching, and if the weather is clear and pleasant, may be allowed to remain out three or four days. It will cure rapidly, and the sticks may be moved closer together each day. It should, however, never receive a "wetting" after it is cut, before "housing."

The Housing of the Crop is done as fast as it is cured up on the scaffold, or as the indications of rain make it necessary, care being taken not to bruise or tear it in hauling. The sticks of tobacco may be piled upon the wagon or cart, and hauled to the barn and hung up, commencing in the highest part of the building, and filling up as you go downwards. If the leaves are pretty well cured, you may hang it so as to touch, without crowding it; if not, there should be a little space between. If a cold, rainy spell comes on, you will need to introduce some means of artificial drying. A trench is sometimes dug, and a log or two of wood placed in it, and a fire made, taking care to remove the tobacco immediately over the fire, and avoiding much blaze. This is dangerous, and a better plan is to make a trench across the floor of the barn, of mason-work, covered with sheet-iron, and leading from a furnace outside the house on one side, to a chimney at a safe distance on the other. The color and quality of tobacco may be improved by hanging it closely and

curing by artificial heat, watching that it don't become "funked," or molded, while curing; but the best plan for a beginner is to dry it safely, and make a sure crop, experimenting as he goes along, in order to improve the quality, as he may safely do so. When the stalk becomes dry and entirely cured, which will not usually be for some weeks, the crop is ready to "strip." The hanging tobacco yields to the influence of a rainy day or a foggy morning, and "comes in case," or softens, so it will not crumble. It must never be handled when dry. When it is just soft, not damp, or when it is barely so soft that it can be handled, (if it is approaching that softened state,) it may be taken down and taken off the sticks, and "bulked," by piling it alongside a partition, or by itself, with the buts of the stalks outward in every direction, and the tops or leaves in the center. Several hundred pounds may be thus bulked down, and can be worked up while the hanging tobacco has gone out of case, and can not be touched.

"Stripping" is performed by holding the plant, top down, with the left hand, while with the right hand the leaves are pulled off, taking care to have the stems all even in the hand, so that the ends are together. When ten to fifteen leaves have thus been grasped by the right hand, change the handful to the left hand, and with the right, select a leaf and wrap it around the stems at the end, so as to bind them altogether and cover up the ends, then split the other leaves apart with the finger, and pull the end of your wrapping-leaf through, and you have a "hand" of tobacco. A small "hand" of leaves, uniform in size and color, will be found the most desirable shape to tie it in. The bottom leaves of the plant, and all corn and defective leaves, should be tied up by themselves, and are known as "lugs."

Hand of Tobacco.

These "hands" should be "bulked" again, with the wrapped end out, and covered with straw, or any thing that will retain the "case," and if subject to immediate sale, may be boxed up or hauled to market. If boxed, it should be put in tight boxes—if hauled, it should be kept covered until unloaded. Care must be taken to avoid "high case"—extreme dampness or softness in bulking tobacco after it is stripped—as it may be "funked" in bulk, and ruined; and it should not be packed in that condition when it is liable to remain long. It is a crop that is never off of hands. The writer on one occasion sent a last load to market, and next day made a plant-bed.

The present high price of the article, and the fact that boys and men not able-bodied may be profitably employed, will doubtless attract the attention of farmers, and an enhanced production be the result.

No. XI.—BY A. C. LIBHART, LANCASTER COUNTY, PA.

Soil and Situation.—If it is intended to raise a crop of tobacco, a primary and very important consideration is the situation and quality of the soil. The best situation can not always be chosen with accuracy, as much depends upon the season; if it be dry, a meadow or other low piece of ground is preferable to a more elevated tract; and if, on the contrary, it should prove to be a wet one, then the cultivator runs a great risk of losing his whole crop by mildew, frost, or inundation by heavy rains. The safest and surest is a moderately elevated situation, which may be either level or gently rolling; hill-sides or steep declivities being objectionable on account of the liability of the plants being washed out by heavy rains. The soil best suited to growing heavy tobacco is a deep sandy loam, made as rich as possible with barn-yard manure and thoroughly plowed and worked. Any soil that will hold water long about the roots of the plant will not do for tobacco, as in such situations it becomes attacked with a disease vulgarly called "fox-tail," in which the new leaves, as they appear from the heart of the plant, are of a sickly, transparent, yellow color, spotted with greenish specks, and shriveled and curled up, not half as long nor wide as they should be, and if the plant is not divested of the diseased portions, finally culminating in a mass of worthless vegetation. A stiff clay soil should be avoided as being too liable to bake and become hard, thereby checking the progress of the minute fibrous roots of the plant. If the land be in sod, it should be plowed in the fall, and even if it be open, it will be benefited thereby, as the frost will destroy a great many of the larvæ of the cut-worms, which are a great nuisance among the young plants when just set out.

Seed-Bed.—In the preparation of the plant-beds and sowing of the seed great care is required, as a good crop of tobacco depends greatly upon a good and abundant stock of plants. Select a situation free from the blasts of the north winds and which receives as much sunshine during the day as possible. Then manure strongly with well-rotted compost, hen-manure, ashes or other good fertilizer and spade to the depth

of about a foot; then rake or otherwise pulverize the ground to as fine a condition as it is capable of. When the bed has been thus prepared, the seed should be sown in about the quantity of a teaspoonful to every one hundred square feet, and in order to get it distributed more evenly, it may be mixed in dry wood-ashes or sand. Sprouting the seed previously to sowing is not a good practice, as the germ is so delicate that it is apt to be injured by handling or drying up in the sun, besides being entangled in bunches, and thus coming up very irregularly. After the seed has been distributed over the bed, it should be rolled or beaten down pretty firmly with the back of a spade; this presses the earth around and against the seed, which enables it to germinate quickly, as, owing to its minute size, it is not enabled to do when lying loose and exposed to the air. In this latitude, 40° north, the time for sowing the seed varies from the fifteenth to the thirty-first of March, according to the season; this renders the plants fit to set out about the latter end of May or beginning of June. They may be had two or three weeks earlier by forcing under glass; and in high latitudes this will be necessary to insure a ripening of the crop before frost. Whenever the surface of the bed becomes dry, it must be watered with tepid water; this should be done in the morning or evening. It is scarcely necessary to add that the bed must be kept perfectly free from weeds; tobacco differs from most weeds when making its first appearance above the surface of the ground, by its bright green color and by lying very flat upon the soil. After the leaves of the plant have attained the size of a quarter-dollar they may be set out in the field, but they will be all the better if double that size, as they are then not so easily destroyed by the cut-worm. The main point, and that upon which success greatly depends in raising a good crop of tobacco, is to have good plants enough to fill the patch at one planting, so that the tobacco may be of a uniform size and ripeness when cut off.

Varieties.—The best variety for cultivation in a high northern latitude is the Connecticut seed-leaf, as it ripens two weeks earlier than most any other variety, cures and colors better, and commands the highest price in the market. The Pennsylvania seed-leaf outstrips the Connecticut in size and weight, but owing to its requiring a longer time to mature in, is not so well adapted to climates north of 41° or 42°.

Preparation of the Soil.—The manure should be spread and plowed down several weeks before it is intended to plant; there is scarcely any limit as to the quantity of manure that may be put to the acre, it seeming that the richer the ground is, the larger will be the tobacco. As an instance verifying this fact, a gentleman in this place raised the past season, on a half-acre of land, fourteen hundred lbs. of tobacco, of the aggregate value of $230. There was $25 worth of barn-yard manure put upon it at about the rate of fifty cents per one-horse load; the average crop in the vicinity was only about twelve hundred lbs. to the acre. After the land is plowed and a few days before it is intended to plant, the soil should be well worked with a harrow or large cultivator until it is free from lumps or clods, when it is ready for ridging; this is performed with a common plow; beginning on one side of the field, take a light furrow, so as to throw up a ridge about five or six inches higher than the surrounding surface of the field; when arrived at the end, return another furrow alongside, so that the earth thrown up by the plow unites with that of the former furrow, leaving a ridge apparently about ten inches in hight, but really only five or six, above the general level; so proceed, making the apex of the ridges three and a half feet apart, until the whole is finished. Measure off the distance of thirty-six inches for the plant on the top of the ridge, with an instrument constructed as follows: take two strips of board, two and a half feet long and an inch square, make one end of each pointed; then spread them in the form of a pair of compasses until the points are the desired distance apart, making the other ends lap each other; fasten them and put a brace across about the middle to keep them stiff; with this instrument one person can go before, and, planting one point at a time on the apex of the ridge, measure off rapidly and correctly the place for each plant. Now take a hoe and at each indentation made by the compasses, cut off about two or three inches in depth of the top of the ridge, and tap it lightly with the back of the hoe. This forms a platform or "bench" for the reception of the plant.

Transplanting.—When the ridge has been thus prepared, one person goes ahead with a basket of plants and drops one on each "bench," another person following and planting as rapidly as possible, as it is injurious to the plant to leave its roots long exposed to the air. In inserting the plant, a hole may be made with a pointed stick, but the most expeditious as well as the best way is with the hands. The roots of the plant are carefully inserted and the earth pressed moderately tight upon them; care must be taken not to press the delicate heart-leaves, for upon their preservation depends the future vigor of the plant. The best time for planting is during a warm, drizzling rain; but if no such occasion presents itself when every thing is ready, then immediately before or after a shower will do nearly as well. If it is necessary to plant without any rain, it should be done in the evening, and each plant watered slightly. Unless absolutely necessary, never plant when the ground is in the consistence of mud, as the roots are doubled up and stuck together, and there is considerable time lost in starting the plant, if, indeed, it ever becomes vigorous. In taking the plants from the bed, if the earth is not previously well moistened by rain, water the ground sufficiently, so that the plants will come up with some earth attached to the roots; they may be pulled by taking hold and gently doubling up the several large leaves

of the plant at once; they are very nicely raised with a common table-fork. After the whole area has been planted, it should be gone over every few days, and such plants as have been destroyed by the cut-worms or otherwise replaced by a new one; if, however, a plant shows signs of remaining vitality, it should not be destroyed, but a new one placed alongside, as it often happens that a plant of the first setting, even though it be injured, will eventually outstrip in growth one of a subsequent planting; either can be used to advantage in replacing any missing plants at the first hoeing, transplanting them with a large ball of earth to the roots.

Cultivation.—When the weeds begin to appear pretty abundantly, and after the plants have made visible growth, a cultivator must be run between the rows, taking care that it does not throw up the earth on the ridges and cover the plants; a cultivator that can be regulated in width is the best. Hoe down the prominences of the ridges to a level with the plants, and eradicate all weeds that have come up between the leaves of the plants, also transplant from any double plants to such hills as have become vacant. The plants will now begin to grow vigorously and require no attention beyond transplanting to fill vacancies until a new crop of weeds appear, when the cultivator must be again run through and the plants carefully hoed, fresh earth being drawn up after the weeds have been scraped away. Care must be taken not to hoe too deep close to the plant, as it destroys too many of the fibrous roots, which have begun by this time to permeate the soil in every direction. When the weeds and grass have been thoroughly killed by the sun, the shovel-plow or hook may be run between the rows, and following after, uncover such leaves as may have been buried by the earth thrown up by the implement, and hoeing the ridges into an even shape, rather flat upon the top and rounding off gradually till they meet in the center between the rows of tobacco, forming a ditch or furrow not too deep, but answering the purpose of a drain. This is all the cultivation it will require, but if the weeds come up between the rows thereafter it will benefit the tobacco as well as the ground, if they are scraped off with a hoe.

Worms.—Now no attention is required until the tobacco-worms appear, which, in this latitude, 40° north, is about the latter end of July, when it must be gone over every few days and the worms picked off and destroyed. The moth that produces these worms is nocturnal in its habits, and in the twilight may be seen hovering over the plants and depositing its eggs on the under side of the leaves; these are of a transparent green color, and very hard to detect on account of their similarity in color to the leaf. The worm begins to feed as soon as it emerges from the shell, and grows and increases in size so rapidly that it soon becomes a formidable enemy to the farmer, and if not captured will soon cut the plant to shreds: and not content with spoiling one plant alone, will visit and demolish several more before entering the earth and becoming a chrysalis. Continue to visit the field regularly every three or four days until the time for topping arrives.

Topping.—There can be no stated time for this, as it depends upon the stage of growth in which the plant may be, and the latitude or climate. As a general thing it should be topped before the seed-buds are visible, for when these appear the plant has expended most of its vigor and is no longer able to mature the upper leaves; and it must be done at least four weeks before the period of heavy frosts. The number of leaves that may be left to a stalk depends upon the quality of the soil; if it be very strong it will mature twenty or twenty-four leaves, but in general from sixteen to twenty is amply sufficient to leave on a stalk in any situation. In topping it is better to pinch out enough of the crown of the plant to leave the first two leaves not less than three or four inches long, as they grow more vigorously and mature more rapidly than the small and tender leaves found about the blossom-buds. In pinching out the heart of the plant, care must be taken not to break or injure the upper leaves that are left. When topping, the plants intended to produce seed for the following year's crop must be spared; they should always be chosen with regard to the heaviest, as well as the longest and broadest leafed plants, as weight and size of leaf is the chief consideration of tobacco-growers. The seed-stalks should be left stand until the pods are fully formed and begin to turn brown, when the leaves may be stripped off and saved, and the stalk be spaded up and placed beyond the reach of frost until the seed is fully ripe.

Suckering.—Soon after the tobacco has been topped the "suckers" begin to appear from the junction of every leaf with the stalk; they must be pinched off as soon as they are large enough to be caught by the thumb and finger, and every new one that appears must be served likewise, for if left they consume much of the nourishment that would otherwise go to the leaves, besides much impairing the process of curing when the stalk is hung up.

Cutting and Housing.—When the top leaves have attained the size of the lower ones and begin to be dotted with reddish spots, the tobacco is ripe and ready to be cut off and hung up to cure. There are several methods of hanging up tobacco, but the following two are the best and shortest: first, splitting and hanging it upon lath or poles and leaving it to partially cure in the field; secondly, nailing it to rails with lathing-nails, at once in the shed. The former method, for high northern latitudes, is by far the best, as it will cure in a much shorter time, (and thus prevent the destruction of the crop by freezing in the shed,) by the drying of the pith of the stalk, which is the main reservoir of moisture. It is performed as follows: have a chisel about a foot long and three inches

broad, the sharp end not beveled on one side, but coming to an edge by a gradual taper on both sides, (a common tenon-saw will do pretty well;) place the edge of the chisel in the center of the stalk upon the end where it has been topped, and push it down, guiding it in its course so as not to break or cut off any leaves, to within three or four inches of the ground; the stalk may then be cut off with a hatchet, or with the chisel if it be made pretty strong. The splitting may be done in the morning when the leaves are too brittle to admit of the stalk being cut down, and then when the sun has sufficiently wilted the leaves, the stalk may be cut and left to lie until it will bear handling without breaking the leaves. The lath being previously prepared, four feet in length and about an inch in thickness on one edge, and one half inch on the other, and two inches broad, (or poles cut in the forest will answer pretty well;) then have trestles prepared high enough to allow the stalks to hang suspended without touching the ground, and set far enough apart in the field to admit of the lath reaching from one to another; now place the stalks of tobacco upon the lath, (previously laid across the trestles,) by slipping them over and down until they will hang perpendicular and six or eight inches apart, so they will merely touch, without crowding too much. It may be left hanging thus exposed to the weather until the leaves are so wilted that the stalks hang apart without touching and the lower leaves begin to dry, when it is taken off the trestles, each lath entire, and laid upon a wagon and hauled to the

Shed or Drying-House.—The shed must be constructed of timbers strong enough to resist storms, and should be boarded "up and down." About every three feet one board should be hinged, to readily open and shut. If it is intended to split and lath the tobacco, the inside of the shed must be divided by rails into widths to accommodate the lath, and likewise into tiers, one above the other, far enough apart to allow the stalks to hang from, well separate. The frame of rails and timbers inside the shed destined to sustain the weight of the tiers of tobacco (which, when green, is exceedingly heavy) should be strongly constructed, so as to preclude the possibility of breaking down, for if this should happen to the upper tier, in all probability the whole would be tumbled to the ground. When ready to hang up, beginning at the top tier of the shed, slip on one lath after the other, until the whole is filled. The process of nailing it up to rails or strips of board, in some respects may be superior to the former method, as the tobacco is more expeditiously secured in the shed and does not require so much handling, but in general there is more tobacco lost by being frozen in the shed than will pay for the difference in time and labor. The stalk should be cut down after the dew is off in the morning and left to wilt. If the sun be very hot the tobacco must be watched that it does not scorch, and if this be found to be the case, it should be thrown in heaps about a foot high and three feet or less in width, and then hauled into the shed; here it must not be piled more than a foot high, or it will soon heat and spoil. It should be nailed up as rapidly as possible; one person sticking the nail in the pith of the stalk exposed by cutting it off from the ground, and shaking it to loosen the leaves, hands it to a second person, who nails it to the rail, far enough apart to allow of the circulation of the air throughout. After the crop is in, the doors and shutters should be opened all round, so as to allow a strong draft of air to pass through the tobacco and prevent what is technically called "burning." This is literally nothing more than a partial decomposition of the leaf, consequent upon the exclusion of air from passing through it while in the green state, which destroys its quality and texture. When dried it has a blackish brown color and crumbles beneath the touch. When the tobacco is pretty thoroughly cured, and during dry weather when it is very brittle, the high winds that prevail about that season will damage it very much if allowed to blow through the shed, hence at such times the shed should be closed on the sides whence the wind comes, and opened again when it has ceased to blow. When the leaves are all dry, or after the weather has been severe enough to freeze the remaining green ones, the tobacco is ready to be stripped.

Stripping.—At the setting in of a warm, drizzling, wet, foggy spell of weather, the shed must be opened on all sides to allow the damp atmosphere to pervade the whole interior; after the dry leaves have become damp enough to allow handling in any degree without breaking, the stalks must be taken off the lath or pulled down and laid in heaps about eighteen inches or two feet high, and any desired length; if it is not intended to strip it immediately, it should be conveyed to a cellar or other apartment, where it will remain damp; it should not, however, be suffered to remain longer than two or three days in heaps, without examination, as there is sometimes sufficient moisture remaining in the stalks or frozen leaves to create heat and rot the good tobacco. If found to be heating, it should be changed about and aired and be stripped immediately. If found to be drying out, further evaporation may be checked by covering the heaps with damp straw or corn-fodder. Tobacco is usually stripped into two qualities, "ground-leaf," or "fillers," and "wrappers;" the leaves that lie next the ground, generally from two to four, are always more or less damaged by sand beaten on by the rain and other causes, hence they only command about half the price of the good tobacco or "wrappers." The ground-leaves are taken off first and tied up separately in bunches or "hands;" this is performed in the following manner: take off one leaf after another, until there is contained in the hand a sufficient number to make a bunch about an inch in diameter at the foot-stalks, which must be kept even at the ends, and holding the

bunch clasped in one hand, take a leaf and wrap it around, (beginning at the end of the bunch,) confining the end under the first turn, continue to wrap smoothly and neatly until about three inches of the leaf remains, then open the bunch in the middle and draw the remaining part of the leaf through. This forms a neat and compact "hand," that will bear a great deal of handling without coming open. After the ground-leaves have been removed, the good leaves are stripped off and tied up the same as the ground-leaves, with this exception: the leaves of each stalk should be tied in a bunch by themselves, to preserve a uniformity in color and size, as tobacco is sold in the market according to color and size, therefore if the leaves of a large and a small plant, or of a dark-colored and a light one, be tied up together, it at once diminishes the appearance and value of the crop.

Bulking.—As soon as a quantity of tobacco is stripped it should be "bulked down," or if intended to be immediately delivered at the packing-house, put up in bales. A place to bulk it in should be damp enough to prevent the tobacco from becoming dry, and not damp enough to cause it to mold. A platform raised a few inches from the ground and open to let the air circulate under, must first be laid down, and then the "hands" of tobacco piled upon it crosswise in successive layers and lapping each other about three or four inches at the points of the leaves. If "bulked" beside a wall, a space must be left behind for air to pass through to prevent molding. It may be thus "bulked" four or five feet in hight without danger of spoiling. In most sections the crop is sold to merchants who have packing-houses, and who pack it in cases of about three hundred pounds each, and store it until it has gone through the "sweating" process by which it becomes fit for manufacturing purposes, and then dispose of it to manufacturers and speculators in the city markets.

Packing.—In order to transport it more readily, it is put up in bales of about one hundred pounds each. The process of baling is performed thus: make a bottomless box about thirty-four inches long (inside) by sixteen high and wide. On each side nail two upright cleats one and a half inches thick, each ten inches from the end. Across these cleats, parallel and even with the top of the box, nail a narrow strip of board. These strips or rails are to confine and keep the ends of the straw bands out of the way while packing. Now have a duplicate box the same size in length and breadth, but about six inches deep, to fit down on the top of the first box; there must be three notches cut in the bottom of each side of this box for the bands to pass through. It should fit down close on the top of the true box. There must also be a lid made to slip up and down easily in the box, with three notches in each side to allow it to slip past the bands. When ready to pack, have good bands made of rye-straw, and wet to render them more pliable. Twist them, and getting inside the box, lay one band down on the ground, with the knot in the middle, and within three inches of the end of the box, and place one foot in each corner of the box upon the band, then push the ends of the band down between the outside of the box and the rail. There must be three bands in all, one at each end and one in the middle. When the bands are in the box, the "hands" of tobacco are laid in the same as in the "bulk," keeping the ends of the bunches well against the end of the box, until it is filled, then put on the lid and press it down with lever or screw, whichever may be most convenient; after it is pressed sufficiently solid, remove the lid and place the upper box in its proper position, fill up to the top with tobacco and press it down again, and so until the box is sufficiently full to come within the limits of the bands to confine. Now remove the upper box and tie the middle band first, (this prevents the mass from expanding further,) and lastly the end ones, and give it another pressure to set the bands and restore the shape of the bale; now pull off the box and there remains a neat, square bale of tobacco of about one hundred pounds' weight, that will bear handling and transportation almost any where without injury or coming open. If the tobacco should become too dry in the "bulk" to pack, it may be restored by sprinkling it lightly with hot water, using a small corn-broom, and re-"bulking" it, taking down and sprinkling one layer at a time and allowing it to remain about two days, when the water will have become diffused throughout the whole, and it again be fit to pack.

No. XII.—BY JOHN J. PURSLEY, FRANKLIN COUNTY, MO.

[Four experienced growers attested to the correctness of the process described in this essay.]

I have grown this plant for over ten years, and have tried many different modes of cultivating it. There are more than twenty distinct varieties, of which I will only mention the most valuable:

The Yellow Prior, Blue Prior, Orinoco, Little Frederic, Big Frederic, Cuba, and Spanish tobacco. These are considered the most valuable in this State. The Yellow Prior and Orinoco are the most profitable.

I prefer the Yellow Prior, as it is the easiest cultivated and is the most fine and smooth of the many varieties. Some growers prefer the Orinoco, on account of it being the heaviest. I do not for various reasons: it has large stiff fibers and ruffled stalks, which afford hiding-places for insects; it molds easier, is harder to cure, and generally does not bring as good a price as the Yellow Prior.

Selecting Seed.—In gathering seed, the largest and ripest bolls should be selected and put away in a

dry place. When procuring seed, at a seed-store, always be careful to get *new* seed. When it is new it is of a dark brown; when old it is lighter in color.

The seed should be sown *any time*, from the first of February till the tenth of March; but I have known it to be sown as late as the twenty-fifth of March and do well.

THE SEED-BED should be made on a south hill-side, in new loamy ground, not too dry. Cut off the timber, and separate the trash from the coarse wood; then rake off the leaves and brush, leaving the ground perfectly bare; so as to admit the heat of the fire. Then put the brush on four or five feet thick; then put on a thick layer of the coarse wood, and then set fire to it. This should be done when the ground is in good working order. After the bed is burnt, the ashes should lie on till the ground is cool; then the brands should be raked off, and the ground dug up five or six inches deep; this is best done with a grub-hoe; rake and pick all the roots out, making it loose and mellow. Level the surface of the bed, and it is ready to be sown. Mix the seed with dry ashes, so as to sow them regularly. One table-spoonful of good seed will sow a bed twenty-five feet square, and will raise enough plants to set five or six acres. After sowing as regularly as possible, the bed should be rolled or tramped with the feet until it is solid and level; then cover it up with brush till spring opens; then the brush should be removed to admit the rays of the sun, which will soon bring the plants; keep the weeds and grass out of the bed till the plants are large enough to transplant. They are handiest to transplant when their largest leaf is three or four inches long.

SOIL AND PLANTING. — Tobacco can be raised on most qualities of soil; but the best is new first year's land; white oak, hickory, hazel, or pawpaw land is preferable. After plowing, the ground should be harrowed thoroughly, making it as mellow as possible. Checker it off with a shovel-plow, so as to form the hills about three feet apart; make up small flat mellow hills. This should be done by the time the plants are large enough to transplant. Transplanting is usually done with a peg, sharp at one end, making a hole sufficiently large to admit the plant; press the earth closely around the roots, in the same manner that cabbage is transplanted.

We generally commence setting out tobacco about the first of June and continue till the twenty-fifth; if set out after this, it is not apt to get ripe before frost.

CULTURE. — As soon as the tobacco is set out there is a great destroyer lays hold of the plant, and often cutting the stem off, thereby ruining it. It is a species of black ground-worm, usually known as the cut-worm. These must be looked after every morning, for they do their mischief in the night, consequently their sign is easier detected in the morning, and they have not entered deep into the ground. When the plant makes a start to grow it soon gets out of the reach of the cut-worm; then all the vacant hills should be replanted.

As soon as the weeds and grass start to grow, the hills should be scraped down with a hoe, not disturbing the roots of the plant. By the time the grass makes its appearance the second time, the tobacco is large enough to admit the plow. A narrow shovel-plow does the neatest work; run three furrows to the row, not close enough to fracture the tobacco, then work it over thoroughly with the hoe, putting a small mellow hill to each plant.

WORMS. — By this time you will observe the work of the green tobacco-worms. They must be looked after at least once a week. There are two different species of this worm — the red-horned and the blue-horned, each equally destructive. One of these worms will soon destroy a plant. When it has finished its work, it enters the ground to come up next spring, in the form of a fly. This fly lays her eggs on the tobacco, which hatch out young worms. The egg is hardly as large as a mustard-seed, and of a yellowish color. Many of these flies may be caught about Jamestown weeds and destroyed. They may be seen of evenings sucking the Jamestown blooms. Keep all destroying insects off of the tobacco while it stands in the field. The bud-worm was very destructive in the years 1860–2; it works in the bud of the plant, making great havoc with the young leaves.

When the tobacco is about a foot and a half high, it should get its last plowing and hoeing, and should have a large flat hill put around it.

PRIMING AND TOPPING. — When the buds that contain the blooms make their appearance, it should be primed and topped. Priming is done by pulling off the bottom leaves, so that those remaining will not reach the ground; then pluck out the buds, leaving twelve or fourteen leaves on a stalk.

We generally go over the field three or four times, topping and priming. First, topping that which is large enough, and letting the smaller remain till the next week, and so on till it is time that all should be topped, to escape the frost. We generally finish topping by the twentieth of August.

If the transplanting is finished by the twenty-fifth of June, which it should be, the tobacco will be amply large enough to top by the twentieth of August, which will give it time to ripen by the twentieth of September.

Some seasons tobacco may be planted later, but it is unsafe in this locality, for the frost may come and lay waste a summer's labor.

SEED-PLANTS.—The earliest plants should be left for seed; do not top them, but trim the leaves off at the top, to about ten to a plant.

Four flourishing plants will yield one half-pint of good seed. The bud-worm should be kept from the seed-plants, as they will enter the pods and eat the

seed. I have caught as many as twenty bud-worms on one neglected seed-plant.

SUCKERING.— After the tobacco has been topped about a week, there will be little sprouts or suckers put forth on the stalk, at the but of every leaf. If they are neglected, they will grow up and go to seed, and take all the nourishment from the stalk, giving the plant a haggard appearance, and literally ruining the tobacco. These suckers must be strictly attended to; they should be pulled off as soon as they have grown long enough to be conveniently taken hold of by the fingers.

There are generally three sets of suckers, sometimes four. After one set is pulled off, in a week or so there will be another set put forth, in the same place, and so on until the tobacco is ripe.

The better the worms and suckers are kept off, the better the tobacco will be.

HARVESTING AND CURING. — When the tobacco is ripe it has a yellow faded color, and becomes brittle; the surface of the leaf is rough and ridged. By bending the leaf short between the fingers, it will break before it will double.

The sticks to hang it on should be in readiness. The best mode of hanging or stringing, is with a V-shaped spear, made of iron or steel. The spear has a socket, large to admit the end of the stick. The sticks should be sharpened at one end, to fit the socket; should be four feet six inches in length, two inches wide, and one inch thick. A stick of these dimensions will hold eight plants.

The tobacco should be cut off just below the bottom leaf, then turn the plant upside down, and let it remain so till the sun wilts it. When it is wilted it can be handled without breaking; then it should be taken up and laid in piles of eight stalks each, placing the buts of the stalks towards the sun, to prevent it from sunburning. When it is sun-burnt it turns black, and it can not be cured any other color than black, which ruins its sale.

The sticks should be strewed along, one stick to a pile; place the spear on the end of the stick, and set the stick upright; then take up the tobacco, one stalk at a time, and thrust it on the stick, letting the spear pass through the stalk, about six inches from the but end; then take the spear off and take up the stick, and shake the tobacco out straight, and set the stick up with the buts toward the sun.

Some tobacco-growers prefer splitting the stalk from the top down to within about six inches of the but, then hang it on the sticks. But I can not agree with them, for it is more difficult to handle, and is apt to slip off of the stick, when moving it; besides, the tobacco cured in this manner is not so heavy as if it was speared. It dries out quicker by being split, but the substance evaporates instead of remaining in the leaf. I am not certain that it injures the taste of the tobacco, but I am certain that split tobacco is lighter than that which is speared.

Some prefer hanging the tobacco on scaffolds in the field until it is ready to be put in the barn and cured by fire. But it is the safest to house it as soon as it is strung on the sticks.

Scaffolding is done by placing poles on forks, about four feet apart, and four or five feet from the ground; then hang the tobacco between the poles, letting the ends of the sticks rest on the poles. This procedure is unsafe, for the rain may come and saturate the tobacco and wash off the gum, thus making it light and chaffy.

Tobacco should not be exposed to the weather after it is cut. It should be immediately conveyed to the barn and hung up. As soon as it gets about half yellowed, a slow fire should be started under it; if made too hot at first, the tobacco will turn black. About the second day the ends of the leaves will begin to curl up; then the fire should be gradually increased, till it heats the tobacco blood warm; it should be kept up so till the leaf is thoroughly cured.

If this rule be strictly adhered to, the tobacco will be cured bright. The brighter it is cured the better it sells.

Our barns, in this State, are generally built of logs, some have frames. The barn should be made tight up to the tobacco, which should hang about eight feet from the ground; above this leave cracks or air-holes sufficient for free ventilation.

A barn to hold two and a half acres of tobacco, which is as much as one man can attend to, should be twenty-four feet square. It should have five tiers of poles, the lowest about six feet from the ground; these should extend across the barn, and be fastened at each end into the walls. The poles should be four feet apart, and the tiers directly one above another.

The sticks which contain the tobacco should be placed within eight inches of each other, on all the poles except the bottom ones, which should be left vacant directly over the fire. When tobacco is nearly cured, it very readily catches fire.

If there be a wet spell of weather before the stalks are thoroughly dry, build a fire under the tobacco sufficiently hot to keep it dry. It should not get damp and pliant until the stalks are dry, then it may be allowed to get damp.

STRIPPING will be the farmer's labor during damp weather, until his tobacco is stripped and ready for market.

The lugs, shipping, and manufacturing, which are worst, medium, and best qualities, should be separated at stripping. The *lugs*, or worst quality, are found at the bottom of the plant; they are chaffy and light leaves, and should be stripped from the stalk and tied in bundles by themselves with all of the ragged, black, and injured leaves.

The second quality, or *shipping tobacco*, is a grade

above the l ge ; it is the red or brown tobacco ; this should also be tied in separate bundles.

The best, or *manufacturing*, is the finest and bright-est leaves, and should be put in bundles by itself.

In stripping, the stems of the leaves should be broken off as close as possible to the stalk ; this adds to the weight of the tobacco.

In forming a bundle, the buts of the leaves should be placed evenly, and closely together, and pressed lightly in the hand ; then a leaf should be folded to form a wrapper two inches in width ; then wrap it tightly and smoothly around the buts of the leaves, winding it from the end down, about two inches and a half ; then open the bundle in the middle, and tuck the wrapper-leaf through the opening, and draw it snug, so that when the opening is closed the wrapper-leaf will remain ; this forms a bundle which we call a "hand of tobacco."

The hands should be strung on sticks, and hoisted up in the barn on the tier-poles ; eighteen or twenty hands may be put on each stick, at equal distances apart.

Bulking and Packing.—Let the tobacco hang in the barn until within a week or two of hogsheading, take it down, remove it from the sticks, and put it in a bulk. This is done by making a platform, and covering it with straw or hay ; then lay the hands of tobacco, side by side, in layers around, with the buts outward, in the same manner as wheat or oats are stacked.

If the atmosphere is dry, the bulk should be covered up closely, so that the tobacco will retain its moisture. It should not be too damp, for there is danger of its molding in the bulk.

If it should mold, hang it up again in the barn, and put fire under it. The mold that it gets in the bulk is generally the yellow mold, which is the most fatal. It sometimes gets a white mold on it, while hanging in the barn, when the atmosphere is very damp and warm ; but this does not materially injure it, for it will rub off while drawing the tobacco through the hands. It should be drawn through the hands every time it is handled, to keep it straight, and to give it a silky texture, which adds to its price.

We generally send tobacco to market in hogsheads, and sometimes in boxes. A hogshead four feet in length, and three feet in diameter, is the medium size. One thousand pounds is considered a full hogshead but one of the above dimensions can hold one thousand five hundred pounds, by hard pressing ; but this blackens the tobacco, and injures the sale of it. Packing in the hogshead is done by first laying a course or layer of bundles straight across the bottom, keeping the buts even and close together ; then fill up on each side of the center course, placing the buts against the staves ; then the buts of the hands that lie against the hogshead should be covered up with two or three others, pressed closely down. The next center course should be laid across the first, and done in the same manner as before, and so on, crossing each course in succession, until the hogshead is two thirds full ; when the press should be applied till the tobacco is pressed down to within a foot and a half of the bottom of the hogshead.

The press should remain on an hour or more, in order that the tobacco may settle together ; then the press should be raised, and the packing resumed as before, till the tobacco is within a foot and a half of the top ; then the press should again be applied till the tobacco is pressed half way down the hogshead ; the same proportion should be observed until the hogshead is full. Then put the head in, and it is ready for market.

No. XIII.—BY JOSEPH H. DAVIS, NEWARK, N. J.

[The following is extracted from a very elaborate essay, but as its matter was from observation only, it could not compete for a prize.]

A beginner would ask what "kind of soil" is best adapted to the growth of tobacco? and I should answer that "kind of soil" which is best adapted to the growth of corn, potatoes, and red clover.

To raise either of these, the soil must be rich, deep, warm, and well-tilled ; free from weeds, and neither wet nor dry. When one wishes to raise a good crop of tobacco, on soil destitute of any one of these qualities, he should supply the deficiency in some artificial way. Deep working is not to be omitted on any account. A lot of land with a southern inclination, sheltered by hills or woods from high and cold winds, would produce better tobacco than another lot destitute of such protection, for the reason that cold winds check the growth, and high winds break the tender leaves badly, and thus depreciate their value. Deep-worked soil drains better, stands a drouth and takes in the air and sun's rays better, and is every way more suitable to tobacco than shallow-worked and wet soil.

It is an established fact that tobacco draws largely on the soil for its growth, and it is absolutely necessary to have a deep and finely-worked rich soil, if the grower wishes large profits on his outlay.

I will here add that I have never seen soil so rich that a little manure would not benefit it, and I have seen tobacco growing on land naturally so rich as to yield forty to sixty bushels of oats, or from fifty to eighty bushels of corn, to the acre, one or the other of these crops having been grown on the ot every year for forty-two years, without a particle of manure,

and the owner said to me that he had cultivated this field the entire time, and that a little well-rotted stable-manure did his tobacco good. This field was in the eastern part of Kentucky.

While tobacco luxuriates in a deep, rich, warm, new soil, abounding in the salts and acids of decayed and burned wood, it can be profitably raised on an old, exhausted soil, even if it be sandy and left for its poverty. The ashes of wood, peat, or muck, as well as their pyroligneous acids, are excellent fertilizers, as is the ammoniacal water from gas-factories. I should not hesitate to cultivate tobacco on an old exhausted soil, even if it were a light sandy one, provided I had near by one of the beds of the New-Jersey green sand or a bed of peat, turf, or muck, in which case I would draw from either at least fifty ox-cart loads, in the fall, on to each acre I intended to cultivate the next year, and spread it evenly over the intended lot, so as to let it have the freezings and thawings of the winter. As soon as the spring season would permit, I would harrow the ground, so as to break and mix the muck well, and then plow eight inches deep. When the tobacco-plants were ready for transplanting, I would cross-plow the field twelve inches deep and harrow across these furrows, so as to again give the soil, and muck, peat, or sand a thorough mixing. Then, with the "New-Jersey corn-marker," I would mark it and cross-mark it three feet each way. At every intersection, I would put one quart of the following compost: fifteen bushels of wood-ashes, two barrels of the gas ammoniacal water or urine, and three bushels of fine-ground gypsum and one hundred and thirty bushels of the green sand, peat, or muck that had had a winter's frost. Hen manure would be a good substitute for the gas-water or urine, but it would have to be soaked well. These several substances to be completely mixed. This quantity should be prepared for every acre, or 150 bushels would about give a quart to every nine square feet of an acre. I should prefer to dress the ground thus, and rotate with corn, clover, potatoes, and tobacco, and I would not change the rotation or manuring, except to use less as the soil I cultivated was richer. There are many substitutes for each part of the fertilizers named.

I must now return to the seed or plant-bed, which should be near the field where they are to be set, and in a sheltered corner for preference. The bed should be as thoroughly worked and enriched as the field, or as one would prepare a garden for choice vegetables, having two bushels of the compost well raked into each square rod. The seed may be sown in drills, which are easier to hoe, while broad-cast is easier to sow. I should prefer the drill-sowing, and not more than four or five inches apart, to be done as early as spring will admit

The quantity of seed to be sown is the next to be considered. I have heard some growers say that a common pipe-bowl twice full of seed was *about right* for each square rod of seed-bed. A Virginia grower told me that he planted the seeds of five of his best tobacco-stalks for every two acres of the field he wished to set with plants, thus making allowance for waste and the numerous casualties attending the young plants. But the most definite statement I received was from a gentleman in Maryland, who said his practice was to sow three ounces of seed for each ten acres he intended to cultivate in tobacco. I have some ounces of Cuban seed, from which I have weighed, and counted enough to find eight hundred and seventy-five thousand seeds in an ounce. Should every seed perfect a plant, it would be about sixty-seven times the number needed. Perhaps, owing to the imperfect seeds and all other circumstances that tend to the destruction of the young plants, it may be best to sow an ounce of seed to every four square rods of bed, and a plant to stand on every six square inches would give one quarter more plants than needed, allowing a rod of bed for an acre of tobacco.

CURING. — The usual custom is to let the stalks hang until the stems of the leaves get dry enough to break when pressed in the hand.

The Cuba tobacco-grower would force the drying in wet weather and retard it in dry weather, as either extreme is injurious; the wet is injurious, as the leaves, when they change from the natural color to a pale yellow and light brown, easily mildew; when dry, as before-named, it is taken down. Damp weather is best, so as not to break the leaves, which are immediately stripped from the stalks and sorted into as many grades as the market may require, from one to four and even more grades, as "bright yellow, dull, seconds, and ground-leaves." But I see no necessity of but three grades, as the *over-ripe*, the *unripe*, and the *just ripe* at cutting, and when properly dried they show their grade plain enough to sort. After being stripped and sorted, they are to be separately piled ("bulked" some say) in courses of leaves — two, four, or six tier of leaves, stems end out, and three to four feet high. The leaves should be kept straight in all these handlings. The heap should be made up each day separate, as it begins to make tobacco in twelve hours or so, by fermenting, which is variously called "curing, sweating, conditioning," etc. Soon as the heap begins to get warm it should be repiled, putting the inner tier out so as to equalize the fermentation; some repile several times and some none; but the fermentation should be kept equal, and if covered with old sail-cloth it can be regulated. This fermenting is allowed to proceed for from four to six weeks by careful manufacturers; as it is the process that makes the tobacco to suit the taste of tobacco-epicures it should be carefully done, yet many do it in a careless manner, and thus have an article so poor as to not find many lovers.

At the end of the four to six weeks the Cuba grower would have one side of each leaf slightly moistened

with the decoction of tobacco, which is made by letting some leaves rot in clean water, and then he would tie it up in hanks of twenty-five or thirty leaves, and hang one day for drying, then take it down and pack it in tight casks as being best. From these leaves he would make the best Cuba segars. The Virginian grower would not wet his tobacco after it had fermented, but simply tie it in hanks so that five or six would weigh a pound, and then pack it in his hogsheads for market; and this, after it had lain from one to six months in the "conditioning bulka."

GENERAL FACTS CONCERNING TOBACCO.

BY S. B. NOBLE, PONTIAC, MICH.

[The following interesting general facts are extracted from an able essay by the above-named author; want of space precluded the publication of the whole of this and many other valuable articles contributed. We only intended to print thirty-two pages, but there were too many good essays to stop short of forty-eight pages. A supplement may be issued hereafter, though it is probable that this work contains all that is needed.]

Loudon enumerates fourteen different species of tobacco. Of these, but two are cultivated to any amount, namely, *Nicotiana rustica* —Viscid-pubescent, leaves petioled, ovate, entire, tube of corolla cylindrical, longer than calyx, round, obtuse. *Nicotiana Tabaceum* —Viscid-pubescent, leaves lanceolate, sessile, decurrent, tube of corolla inflated at the throat, tube acute.

The *Nicotiana rustica* is but little cultivated. It is the most hardy sort, and is grown in the colder climates of Europe, and to some extent by the North-American Indians. The *Nicotiana Tabaceum* is the species generally cultivated; of this there are several varieties, each possessing qualities peculiar to itself, or qualities supposed to be derived from the various modes of cultivation and curing. Each cultivator selects such variety as suits him best, having reference to soil and climate. The kinds more generally cultivated are the Cuba and the Connecticut seed-leaf; the latter is best adapted to Northern States, in nearly all of which it is raised to a very considerable extent.

History. — Tobacco was first introduced into Europe by John Nicot ambassador of the King of France to Portugal, by whom the first plant was presented to Catharine de Medicis: it was afterwards known as the Queen's plant. Nicot is said to have received the seed from a Dutchman, who obtained it from Florida. The name Tobacco, by which it is now universally known, originated by its having been mostly introduced into Europe from the island of Tobago, in the West-Indies. By the French it is called *Tobac*, German *Tabak*, Spanish *Tobaco*, and by the Italians and English *Tobacco*.

Linnæus says tobacco was known in Europe as early as 1560. It was introduced into England about the year 1586, in the form of an herb, and used by Walter Raleigh for smoking. Raleigh received it from Captain Ralph Lane It has since been introduced into almost every European country and some parts of Asia. The English Parliament prohibited the cultivation of tobacco as a crop, and it is now only grown as a curiosity in the gardens of amateurs. Some of the European governments impose excessive duties on imported tobacco. France received one year ten million dollars revenue from it. It is estimated that an aggregate revenue of over fifty million dollars is derived from tobacco by all the foreign governments

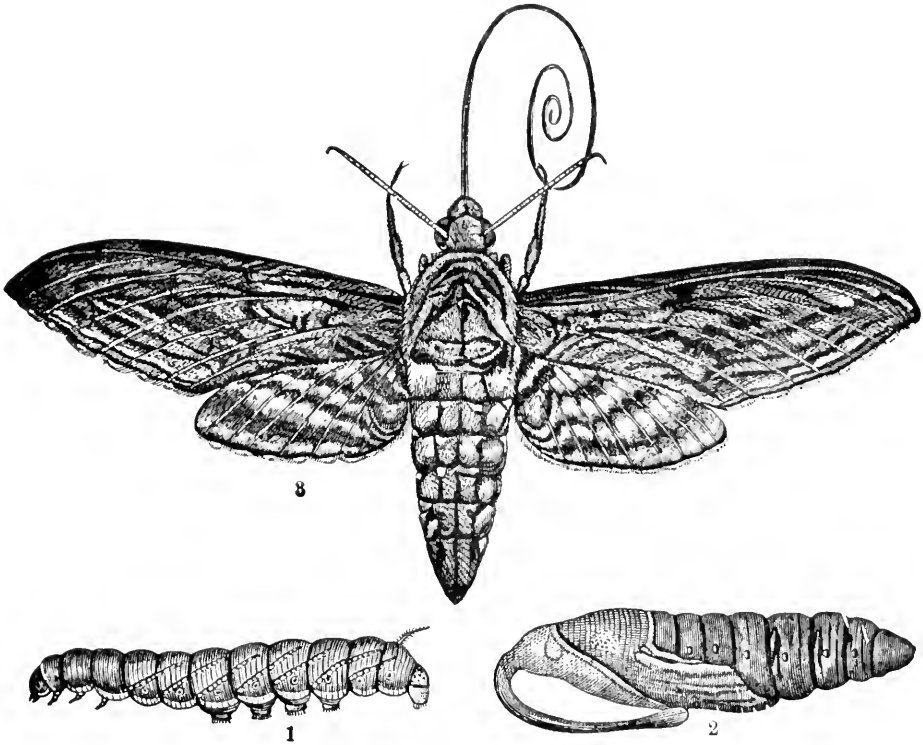
Tobacco, as a staple, has long been cultivated in Maryland, Virginia, North-Carolina, Kentucky, Tennessee, and Missouri, but for a few years past it has been largely raised in New-England, New-York, Michigan, and Illinois, and it will soon become a staple in most of the Northern States.

Medicinal Properties. — Tobacco is a powerful narcotic. Taken in small doses it is sedative, gently quieting the nerves, producing sleep; in larger doses it acts as an emetic and diuretic. If taken in excessive doses, it produces nausea, vomiting, spasms, and convulsions, which often terminate in death.

Chemical Properties. — An analysis of the ashes of tobacco, by Professor Johnston, shows the following constituents in their several proportions per cent:

Pot-Ash,	12·14
Soda,	0·07
Lime,	45·90
Magnesia,	13·09
Chloride of sodium,	8·49
Chloride of potassium,	8·98
Phosphate of iron,	5·48
Phosphate of lime,	1·49
Sulphate of lime,	6·85
Silicia,	8·01
	100·00

From the above analysis, it will be observed that of the mineral matters contained in tobacco the following predominate: silicia, potash, lime, and magnesia, with a large proportion of the phosphate of iron and sulphate of lime. There is in tobacco a volatile alkali, which may be known by its smoke changing the color of flowers — turning red to purple, and purple to green. Different kinds of tobacco are distinguished by the peculiar odor emitted: this variation is in part due to the different modes of curing the leaf



THE TOBACCO WORM.

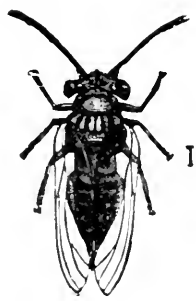
THE above engraving represents one of our most voracious and destructive insects. It is shown in its different stages of larva, chrysalis, and imago, or moth. The larva or worm, fig. 1, is a great pest upon potato and tomato vines, and upon tobacco. It is especially injurious to the latter crop, as it perforates the leaves and renders them ragged and worthless. The worm as it comes from the egg is so small as to be unobserved, but having an enormous appetite, it devours rapidly, and soon grows to about twice the size represented in the cut. When not feeding, it lifts up the head and fore-part of the body, and remains apparently lifeless. From its resemblance in this position to the Egyptian Sphinx, Linnæus gave the name *Sphinx* to the genus. The larva is of a light green color, with whitish oblique stripes, and has a horn upon the rear end of the body. Though it is repulsive in appearance, it is perfectly harmless to touch, and may be picked off with the hands without fear. After it has reached its full size, it leaves the scene of its ravages and goes into the earth, where it throws off its skin and becomes a brown-colored chrysalis, fig. 2. The curious projection, like a handle, is a sheath which holds the tongue of the future moth. The moth or perfect insect, is represented in the engraving, fig. 3, of the natural size. It is of a gray color, with orange-colored spots on each side of the body. As there are five of these spots on each side, it is called *Sphinx quinquemaculatus*, or Five-spotted Sphinx. The moths may be seen towards night flitting about the flowers, from which they suck the juices by means of their remarkable tongue, which is five or six inches long. When the tongue is not in use, it is closely coiled up and hidden between the two feelers. From the manner of their flight and feeding they are frequently mistaken for humming birds and are called "humming-bird moths," and "horn-blowers." The moths should always be destroyed if possible; by so doing we prevent the production of several hundreds of most destructive worms. Naturalists make one or two other species, which closely resemble the Five-spotted Moth, and are only distinguished by characters which would not be noticed except by the entomologist. [The illustrations above were in part re-sketched and engraved from figures in Harris' valuable work on Insects.]

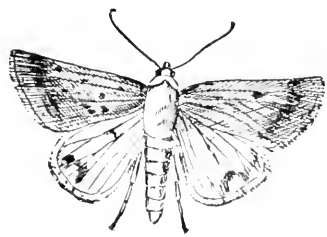
NEW, REVISED AND ENLARGED EDITION.

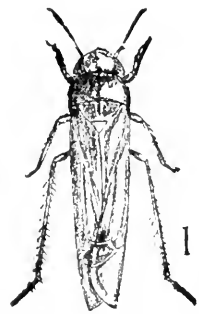
INSECTS AND INSECTICIDES.

A Practical Manual Concerning Noxious Insects and the Methods of Preventing Their Injuries.

BY CLARENCE M. WEED, D. Sc.







This is an entirely rewritten and new work. The first edition, with the same title, was published in 1891, and was at once recognized as the most generally useful handbook on noxious insects that was available to American farmers. Useful as the old book was with its 182 pages, 143 cuts and 7 plates, the extent of the improvements in the new edition may be inferred from the fact that it has 336 pages, 176 engravings and 16 full-page plates. It covers the whole field of insect pests very thoroughly and is specially valuable for its complete and up-to-date methods of fighting insects. The work is thus intensely practical.

It illustrates and describes all the important insect pests and goes into great detail in describing remedies for them and methods of preventing their injuries. Great progress has been made in the use of insecticides during the past three years, all the results of which are embodied in this new book. Unlike previous works on entomology, which frequently have been noted for the fullness with which they describe insects and their poverty of remedies or preventives for the same, Prof. Weed's work excels in practical directions for applying insecticides that have proven to be of real efficiency. We are sure that any farmer or gardener who buys this book will consider the money a splendid investment, for the application of any one of the remedies recommended for important pests will save many times the cost of the work. It answers all the questions about insects and insecticides that will come up at any time during the year, and the book is therefore indispensable.

CONTENTS.

It is profusely illustrated and handsomely bound in cloth, with embossed cover.

Price, postpaid, $1.50.

Address all orders to

ORANGE JUDD COMPANY, 52 & 54 Lafayette Place, NEW YORK.