

"Whatever is worth doing at all, is worth doing well."

TOBACCO,

FROM THE

SEED TO THE SALESROOM.

BY

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PREFACE.

THE favorable reception which my Essay on Yellow Tobacco met, carrying it through four editions, in a few years, aggregating over one hundred thousand copies, and the last edition being exhausted, causes me to re-write, revise and enlarge it, and as far as in me lies, to make it more worthy of a discriminating and appreciative industry.

The science of tobacco culture, curing and management, like every other industrial pursuit in this progressive age, has been greatly advanced in the past decade. The demand for bright goods of first quality has never been fully met, while prices have ruled high enough to lead to increased efforts in this line, and in many instances in localities where very little is known concerning this important crop.

To supply instruction called for, by giving information born of experience, is what the author seeks to do in this little book. He can scarcely hope for a more favorable reception than was accorded to the first edition.

In a practical treatise like this, it is difficult to avoid dry and tedious narrative. The only pleasure that can come from its perusal, is the hope of acquiring information which will prove useful to the reader. That it may accomplish this, lighten the labors, soothe the anxiety, and cheer the hopes of the young and inexperienced, is the sincere wish of the author, who would fain hope that his work will not be in vain.

R. L. RAGLAND.

Hyco, Halifax Co., Va., Jan. 1880.

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THE several grades of tobacco, whether for chewing, pipe-smoking, or cigars, require different soils and management to insure a product that will command an adequate return for the labor and means expended thereon. It is therefore of the highest importance that the planter should know what grade his lands are capable of producing in the greatest perfection; and the modes and management to accomplish the best results from such choice.

A deep rich soil, overlaying a red clay subsoil, is best suited for *dark heavy shipping tobaccos*.

A gravelly or sandy soil, with a red or brown subsoil, is best adapted to the production of *sweet fillers and stemming tobaccos*.

Alluvials and rich flats produce the best *cigar stock*.

And experience has proved that a gray sandy or slaty top-soil, with a yellow porous subsoil, is best for *yellow wrappers and smokers*. And these grades are in so great demand, and command so much more in price, than any others, that we propose, in this short treatise, to devote to them most space. For, in the production of these, the author has had most experience and success; and while the production of brights require more skill and careful management, they seldom fail to make ample compensation for all the attention bestowed upon them.

But unless the planter makes provision by building or arranging suitable barns, provided with flues, or prepares charcoal, he need not expect to succeed, and had better aim at some other grade requiring less preparation, cost and skill.

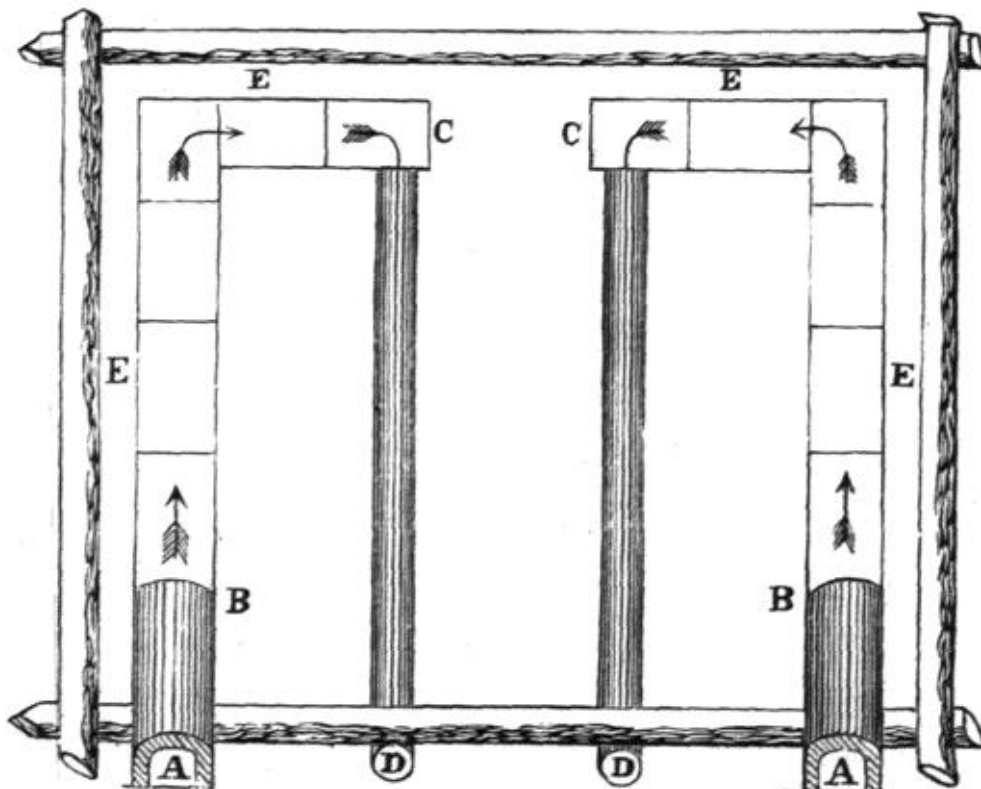
Log barns, ranging from sixteen to twenty feet square, are the sizes mostly used. These should be built about twenty feet high in the body and covered with shingles or boards. Large logs may be used until the pen is built about seven feet high from the ground. Then if the size is twenty feet, lay off for five rooms, four feet apart, and place tier poles across to form the lower tier. Raise two logs higher all around and put on another course of tier poles directly over the first. Then, using smaller logs

(cabin size) place on three logs higher all around, laying on tier poles as before, and continue to elevate the body of the barn until you have five tiers. Then place two more logs around and the plates, and the pen is ready to be roofed. You will then have a barn with five rooms and five tiers high. Mark you, the lower tiers are not firing tiers, but placed in the barn for the convenience of hoisting, and for storing cured tobacco when necessary. By this arrangement, the tiers are about three feet apart and vertical, the body of the barn a cube—as high as it is wide and deep—and the whole arrangement conformable to the process of curing. The roof is so constructed, conforming to the plan of the tiers below, as to contain three tiers above the joist, varying in length. Such a barn will hold about 650 to 700 sticks of medium tobacco, six plants to the stick. To prepare it for curing brights, it must be chinked and daubed close.

Flues.

Flues of brick or stone, covered with sheet iron and having return pipes of same material, need not cost over \$25 to each barn. They are cheaper and better than charcoal, and the tobacco cured therewith is cleaner and brighter. For all purposes where it is necessary to apply heat in curing *any* grade, the flue is best, and is destined to supercede the open wood fire with its objectionable smoke.

Believing that we can do the uninformed no better service than in sketching a cheap and efficient plan for the construction of flues, we will attempt to give one that has long been in use, and has proved to do well.



In the first place, cut out two or three logs from the end of the barn, and construct the walls of the flues 12 or 13 inches distant from the sills or walls of the barn, as at E E E E in the diagram, and projecting outside of the walls, at A A some fourteen or fifteen inches. Build the walls eighteen inches apart and eighteen or twenty inches high at A A, decreasing in height as they run back to fourteen inches at C C. Put in sheet iron pipes ten or twelve inches in diameter at C C, equidistant from the flues and from each other, and carry them through the body of the barn, out at D D, with the ends at D D elevated three feet higher than at C C. The flues should be arched or covered with flat stone for about five feet from A A to B B, then cover the flues from B B to C C with sheet iron. It is best to use number sixteen nearest the fire, as at B B, while thinner iron, number eighteen or twenty, will answer for covering the remainder.

For strength, durability, efficiency and economy, this flue has no equal; and its extensive use throughout the bright tobacco region of Virginia and North Carolina proves its value.

Let beginners remember that only by patience and perseverance they can hope to succeed; for without a good stock of these essentials, they can never be successful planters.

Choice of Seed.

The choice of seed, suited to the several grades, is of paramount importance. No one but a novice would sow "Bull Face" and "Big Frederick" for the fine manufacturing grade, or choose the fine varieties for heavy coarse stock. A careful, sensible man will select those varieties which experience has demonstrated will best produce the grades for which his soil and climate are best suited.

We recommend for the dark, heavy shipping grades, the *Long Green*, *Big Frederick*, *Bull Face* and *Medley Pryor*, with a preference for the latter where a rich black leaf is wanted.

For a desirable cutting grade and heavy "drinker," *i. e.*, a porous leaf that will absorb much manufacturing material, we recommend the *White Burley*.

For mahogany wrappers and sweet fillers, there is nothing that excels *Sweet Oronoko*.

For bright wrappers, *Yellow Oronoko*, *Yellow Pryor*, *White Stem* and *Gooch*, each has preference according to locality and fancy.

But what is of transcendent importance to every planter who studies his interest, is to produce first class goods, whatever the grade, and where it is possible, to place upon the market only what is sure to please *the best class of customers*.

Preparation of Plant Beds.

There are two modes for raising plants—in hot bed or cold frame, or in the open air—one or the other of which has preference according to locality; the former being more practiced north of forty degrees latitude, while the latter is preferred south of that line. We will here give both, that planters may choose.

THE HOT BED.—Select a southern or south-eastern exposure, sheltered on the north, dig and shovel out a space five by twelve feet, or any required length, to the depth of eighteen inches. Place straw to the depth of three or four inches in the bottom of this trench and cover with fresh unrotted manure from the stable to the depth of six or eight inches; then cover the manure with soil—woods mould is best—five inches deep, and surround the bed with planks twelve inches wide on north side and six inches wide on the south. These will make a frame over which sections of canvass covering should be placed to keep the bed warm, promote growth and protect the plants. These sections may be made of frames five feet long and three feet wide, with common domestic cloth tacked thereon as a covering, and they answer every purpose as glazed sash, are cheaper and less destructible, and may be used for several years to grow tobacco or horticultural plants. Once used, you will be loth to do without them for the latter purpose. But to return. Tobacco seed is sown on the bed thus prepared at the rate of two teaspoonfuls to a bed five by twelve feet. To sow regularly, mix the seed with a fertilizer, ashes or plaster, and sow in drills three inches apart. A bed twelve feet long will require four sections of canvass covering, which are light and handy and may be put on or off or adjusted at pleasure. When the plants have pretty well covered the surface of the bed, remove the canvass during the day and only replace them when there is danger of frost, or to keep off the flea-bugs. There is the advantage of having earlier plants by this mode and perfect security against the plant-bug, which will repay for the additional cost of raising at least a portion of the plants needed for the crop, by this safe mode.

OPEN AIR BEDS.—But there is no question that open air beds are cheapest. And, where this mode of raising plants is practicable, it is greatly to be preferred for the main supply of plants. It is a well established opinion that plants raised in the open air stand transplanting better and usually grow off quicker than plants raised in hot bed or cold frame.

SELECTION OF LOCALITY.—On the selection of a proper locality for a plant bed, and its preparation, largely depends the timely supply of strong healthy plants; without which it is impossible to raise a crop of fine

grade. The planter therefore cannot be too careful in choosing a sheltered spot, neither too wet nor too dry, as rich naturally as can be found, and located so as to possess different degrees of moisture.

Go into the woods, original forest if possible, and select a spot near a branch or stream of water, embracing both hill side and flat, and having a southern or south-eastern exposure, protected by woods on the north. Burn over the plat intended for plants, either by the old or new method. The first consists in placing down a bed of wood on small skids three to four feet apart on the ground, well cleared and raked. Then fire this bed of wood and permit it to remain burning long enough to cook the soil brown for half an inch deep. With hooks, or old hoes fastened to long poles, pull the burning mass of brands a distance of four and a half or five feet, throw on brush and wood, and continue burning and moving the fire until the bed is burned over. Never burn when the land is wet. It will require from one and a half to two hours to cook the soil properly.

Or better still: Rake over nicely the plat to be burned, then place down poles from two to four inches in diameter, three and a half to four feet apart, over the entire surface to be burned. Then place brush thickly over the plat and weight down with wood, over which throw leaves, trash or other combustible material, and set the whole on fire and burn at one operation.

But any mode of burning the plat will suffice, provided that it is effectually done. After the plat has been burned and has cooled, rake off the large coals and brands, but let the ashes remain, as they are essentially a first-class manure. Then coultter over the plat deeply or break with grub hoes, and make fine the soil by repeated chopping and raking, observing not to bring the subsoil to the surface, and remove all roots and tufts. Manure from the stable, hog pen or poultry house, or some reliable commercial fertilizer should be chopped into and thoroughly incorporated with the soil while preparing the bed to be sown. Experience has demonstrated that it is better to use both. But beware of using manure containing grass seed. The judgment of the planter must guide him in the amount of fertilizing material to be applied at this stage; but it were well to remind him that the tobacco plant rarely responds to homœopathic doses of plant food, but that the allopathic usage suits it best.

Sow at the rate of a tablespoonful on every fifty square yards at first sowing, and later resow with a heaping teaspoonful over same surface, to secure a good stand. Injury by frost or bugs may require a third or fourth sowing. Sow a little thick rather than too thin to meet contingencies, and secure a good stand in time.

The best way to sow the seed is to mix them thoroughly with a fertilizer or dry ashes, and sow once regularly over the bed, reserving seed

enough to cross sow to promote regularity. The tobacco seed is the smallest of all farm seeds, and consequently requires a light covering. If the seed are sown before the 20th of February, the best way is to firm the surface of the bed by treading it over closely, but if sown later, sweep lightly over with a brush or light rake. Then run surface drains through the bed, with inclination enough to pass off the water. To do this properly run them off four or five feet apart with the foot, then open with a narrow grubbing-hoe to the depth of three or four inches. Then trench deeply around the outside of the bed, to ward off surface water and prevent washing.

MULCHING AND COVERING.—Hog hair whipped fine and scattered over the bed, attracts and retains moisture, protects the plants from frost, and acts as a manure. There is no better covering for a plant-bed, but unfortunately it is rarely ever in full supply. Fine brush should be placed thickly over the bed, or if not handy, cover with straw or chaff free from grain. A covering of some such material is necessary, or the young plants are likely to be killed by frost or suffer from drought, and they thrive better from some protection.

A STANDING PLANT-BED.—Every planter ought to have a standing plant-bed, which may be secured in the following way: Some time in July or August select one of the best of the old plant-beds, and with hoes shave down the green plants over its entire surface, and cover over thickly with straw or leaves, then place green brush thickly over the bed and weight down with wood. When the whole is dry, sometime in the late fall or early winter, set on fire, and thus reburn over the bed. Then chop and rake fine, sow and trench as when first prepared. Repeat the same operation every year, and if the bed is manured properly it will improve and prove a stand-by for many years.

UNBURNED BEDS.—Plants may be raised by going into the forest, selecting a moist rich plat, and after raking off the leaves, coultering or chopping the surface fine, manuring heavily and sowing the seed. But such beds rarely hold out well if the season is dry. They never "repeat" well after the first "drawing" like burnt beds; which are more reliable for a successive supply of plants as the season advances.

TIME OF SOWING SEED.—The time for sowing varies with the latitude, variety and season. Between the parallels of 35 and 40 degrees north, compassing the great tobacco belt, beds may be sown any time between the 1st of January and 20th of March, and the sooner the better for the bright grades, which ought to be planted early to mature, ripen and yellow, preparatory to being cured early in the fall, when more successful curings are usually made. Yellow tobacco ought to be planted out in

May, but June plantings usually do best in heavy dark grades. The planter will consult his interest by sowing at the proper time to suit the grade he desires to raise.

Plants set out after the 10th of July rarely pay for growing and handling, and if not planted by that time it will be wise to plant the hills in peas, potatoes or something else.

HASTENING THE GROWTH OF PLANTS.—As soon as the plants become "square," *i. e.*, have four leaves, you may begin to force their growth if necessary. Nothing is better at this stage of their growth than to apply dry stable manure, rubbed fine and sowed over the bed—applying at the rate of five bushels to every one hundred square yards. Be sure to have it dry and fine, and apply when the plants are dry. This is a favorable time to apply a good fertilizer, and the best time to apply it is during a shower, or when it is apparent that one is impending.

LOOK OUT FOR THE "FLEA-BUG."—If the "fly," as it is called, begins to devour the young plants, apply plaster, in which rags saturated with kerosene oil have lain for a few hours, covering the plants with the plaster, if necessary, to keep the little pests from devouring them. Repeat the application after every rain unless the flies have left.

A covering of green cedar brush has driven off the fly when other remedies failed, and saved the plants. If the flies are numerous, the planter can save his plants only by vigilant and constant attention. Hard burning, early and thick sowing, liberal and frequent applications of manure, are the best safeguards, which rarely fail to reward the planter with an early and full supply of stocky plants, and with some left for his less provident neighbors.

Some planters, if such they may be called, always fail—some never. Follow the latter, and you will always be right.

Selection of Soil, Preparation and Manuring.

The tobacco plant thrives best in a deep, mellow, loamy soil, rich or made so with manures. The subsoil ought to be sufficiently porous to permit the water falling on the surface to pass downward readily, and not to accumulate to drown and stagnate.

If old land is selected, it ought to be fallowed deep in the fall or early winter, that the frosts may pulverize it. Turn under, if possible, some coarse farm manure, for its decay will greatly help to loosen the soil, while furnishing pabulum for the crop. As a coarse manure for yellow tobacco, nothing is better than wheat straw turned under in the fall and winter. The plants rarely fail to ripen yellow in color on land thus treated.

In the early spring more manure may be applied, but it is better that this should come from the compost heap. Follow the application of the compost with one horse turning ploughs, *crossing* the previous ploughing, turning not exceeding four or five inches deep—about half the depth of the first ploughing. Then, just before it is time to plant, run double shovel ploughs over the lot, *crossing* the previous furrows, and follow with harrow or drag, *crossing* again to thoroughly make fine. These repeated ploughings, *crossing each time every previous one*, never fail, if the work is done when the land is in proper condition, to put it in proper tilth.

Let the planter remember that "a good preparation is half cultivation," and not stop until the land is in proper condition.

If any one knows of a better way then let him pursue it—the writer knows of none better. And just here it may be well to state, that perfection is not claimed for any mode or practice recommended in this book, but only the best methods known to the author is given, for guidance to the uninitiated. We live and learn, but life is too short to learn every good thing by experience unaided. Every man owes something to those who are to come after him; to freely give as he has freely received.

But the author is not writing for those who know more than he does—and doubtless there are very many—but for beginners, and those having but little experience in tobacco culture. He gives no advice which he has not followed in his own work, and recommends nothing which experience has not commended as the best in theory tested by practice. Those who possess a better knowledge of the subject, and whose practice is verified by results, ought by all means to give the public the benefit of their knowledge and experience. Planters will gladly welcome their teaching and honor them for their service.

But to return. Having put the land in nice "order," lay off the rows with a shovel plow, three feet three inches apart, and follow, drilling along the furrow some reliable tried fertilizer at the rate of some one hundred and fifty to three hundred pounds per acre, according to the natural strength of the soil and the quantity of manure previously applied. Then follow with one horse turning ploughs, lapping four furrows on the fertilized trench, and when finished in this manner your lot is ready to be planted, when the beds have been "patted" with hoes, with "pats" two feet ten inches apart, to mark points for setting the plants.

New ground, or old field that has grown up and been cut down, will require different preparation from old smooth land. But on the former our best brights are raised. Any preparation that will put the soil in fine condition, clear of roots, tufts and trash, is all that is required. Experience teaches, that if land is cut down two or three years previous to its

being prepared for tobacco, it greatly facilitates the preparation and helps its fertility. Much of the vegetable material both in and upon the soil rots, the roots break easily, and the soil is altogether lighter and finer.

While it is economy to dispense with the hand hoe in making hills on old land—the plough doing all the work as it ought, when it can be well done—yet, on stumpy, rooty and rough land, the hoe is indispensable in the preparation of a hill, as it should be made to receive the plant. But before the hills are made, it may be well, unless the soil is naturally rich, and such is not often the case with soils best adapted to yellow tobacco, to apply some fertilizing material to hasten forward the plants and mature them properly and early. Here commercial fertilizers have done and are doing their best work. Bulky, coarse manures often do more harm than good on new and puffy soils. The smaller the bulk and the more concentrated the fertilizing elements, the more readily they are appropriated and assimilated by the plants, if of the right material and in the most available form. Nitrogen, phosphoric acid, potash, lime and soda are most necessary for the tobacco plant; and a fertilizer which supplies the relative quantity of each will never fail to show good effects therefrom, if the rainfall is sufficient to quicken their action.

There are several brands of fertilizers manufactured specially for tobacco, differing in composition, price and merit; and after repeated experiments with most if not all of the best, the author gives it as his decided opinion, that for *fine, bright, silky tobacco*, nothing equals the Anchor Brand Tobacco Fertilizer, prepared by the Southern Fertilizing Company, Richmond, Va. And this opinion is based upon fourteen years trial, and often in competition with the best of other brands on the market. It is a *tried and proved* fertilizer, which the planter can use without the risk of getting something unsuited to his crop; and therefore we can recommend it with confidence.

There are others possessing high merit, as we know from experience, such as Excelsior, Star, Ober's, Zell's, etc., which will pay to use on tobacco, as perhaps on no other crop. A good article of any grade of tobacco requires *high farming*. Bear this in mind, and act accordingly.

MODE OF APPLYING FERTILIZERS.—Planters differ in the manner of applying fertilizers, whether in the hill, drill or broadcast. That the same quantity will go further and produce larger results the first year for the quantity used when applied in the hill or drill, is generally conceded. But advocates for broadcasting claim that when the crop to which the fertilizer is applied, is to be followed by another in quick succession—to be sown in wheat as soon as the tobacco is removed—then broadcasting is best, for reasons which seem too apparent to need explanation.

Having prepared the land for hilling, apply the fertilizer by which ever mode the planter prefers, and in such quantity as the natural strength of the soil indicates, laying off the rows three feet three inches apart, and make the hills about two feet ten inches distant from centre to centre. Mark the measure on the hoe handle, and require the hillers to apply it frequently as a guide. The rows should be wider apart than the hills, to afford proper cultivation without breaking and bruising the plants at the final ploughing,—a matter of no small importance, as the least blemish on a fine leaf nearly destroys its value as a wrapper.

PLANTING.—Having prepared the hills, you are ready to plant any time after the first of May. Planting is often most effectually done when the hills are being made in May, and the land is moist with the winter's sap, by planting in the afternoon the hills made the same day. If properly planted, very few of the plants will fail to live. Observe to draw the plants one by one from the bed, and handle so as not to bruise them. It is a waste of time and plants to set out very small plants, but wait until they are of proper size—the largest leaves about two and a half to three inches wide. Put a basket of plants in the hands of a boy or girl, who drops a plant on each hill, dropping in one or two rows according to age or expertness. The men follow, with each a planting peg made of hard wood, six inches long, one and a quarter inch in diameter at large end, and tapering to a point. Each planter takes a "hand-plant" to start with (unless the dropper has learned to drop two plants on the first hill), and pushing his planting peg some two inches into the hill, withdraws the peg, inserts the plant, and by a dexterous movement of the peg and the knuckles of the left hand, closes the dirt gently but compactly around the roots. He then picks up the plant on the hill as he moves forward, and by the time he reaches the next hill has adjusted the plant in his hand to insert into the hole in the next hill. Thus the "hand-plant" facilitates the work. Try it, and you will be convinced. There is art in planting properly, as is shown in the increased number of living monuments that test superior work. But why enter into such minute details? say some. That you may start right, shun the errors of inexperience, and practice at the start the best methods, as demonstrated by successful practice.

If the soil is dry when the hills are made, then it will require a "season" for planting. The best come with showers. It is not well to plant soon after a soaking rain, but wait until the land settles. If the plants are good, seasons favorable, and the planting well done, very few will die, if transplanted before the 10th of July. After that time all is uncertainty. Hence the importance of getting a stand before that time.

After planting over, it will be necessary to replant from time to time as

seasons occur, embracing every opportunity to fill up the missing hills. If cut-worms are troublesome, hunt for and destroy every one as far as possible; for it is useless to put a plant in a hill where one of these pests has taken up quarters, and expect it to live and grow.

CULTIVATING.—It is important to commence cultivation soon after planting, to loosen the soil and start the plants growing. Just at this point many planters fail to do their duty, which no subsequent work can atone for. Early, rapid and thorough cultivation is necessary to produce first class goods. If the preparation has been thorough, thrice ploughing, followed each time with the hand hoe, will suffice for the crop.

For the first ploughing, no implement is better than the wing coulter, the next best the cultivator. The second ploughing may be effectually done with the turning plough or cultivator; if grassy, use the first. The last ploughing is most effectually done with three furrows with the single shovel—a furrow on each side, then splitting the middle with the third and last furrow.

Never “scrape down” tobacco with the hoe without putting back on hill or bed as much dirt as is scraped down. This will prevent baking, and save many plants, should a dry spell follow the hand hoe working.

Any process which stirs the soil effectually and often and keeps the plants free from grass and weeds, will constitute good cultivation, no matter how or with what implement done. Old land will require more work in cultivation than new, and dark grades more than bright. Short singletrees should be used after the plants are half grown, to prevent tearing and breaking the leaves.

The yellow grades should be cleared of grass and weeds before the first of August, and not ploughed thereafter; but the hoes may be used at any time to clear out the crop till the leaves commence graining. The longer tobacco is ploughed the later the plants will be in ripening, therefore the importance of giving early and thorough cultivation. Any one who can raise good cabbage ought to know how to cultivate tobacco, as the cultivation is very similar.

Priming and Topping.

Under this head there is a wide difference of opinion. Breaking off the small and inferior leaves of the plant near the ground is called “priming,” which operation is done along with the “topping,” if done at all. There are advantages for and against priming, but all resort to topping—plucking out the seed bud and adjacent small leaves with the thumb and finger. Some contend that pulling off the lower leaves saps the plants and retards growth, if the weather is dry. That permitting the lower leaves to remain on the stalk protects the upper ones from sand and grit,

makes them cleaner and therefore more salable. On the other hand, it is contended by some that by pulling off the lower leaves, which are generally useless, the remaining leaves receive more nutriment and contain more wax, oil and gum. That the lower leaves harbor worms and make the worming process more tedious.

It is best to wait until a considerable number of plants begin to button for seed before commencing to top. Topping should be the work of experienced and trusty hands—men who can top, leaving any required number of leaves on a plant without counting. The secret of this—no longer a secret to the initiated—is, that the topper soon learns to know that counting the bottom leaf and the leaf that hangs over it in the third tier going upward, makes *nine* leaves, including both top and bottom leaves. Fixing this in his mind the topper has only to add to or deduct from this *index leaf* marking *nine*, to leave any desired number of *leaves* on each plant with certainty and without counting. Young man, if you don't know how, get some old negro to show you. Topping you will find is a slow business if you have to count the leaves on all the plants topped. If the plants are not "primed" then the "bottom" leaf must be fixed by the eye, looking upward for the leaf in third tier which hangs over it to catch the cue as before. If priming is done, don't err in pulling off too many leaves. No regular rule can be given, so the planter must judge for himself. The reason given for waiting until many plants are ready to be topped is mainly that more plants may ripen together and be ready for the knife at the same time. This is an advantage that applies with strong force to all tobacco intended for flue curing.

The number of leaves to be left on each plant varies according to the time the work is done, early or late, the appearance and prospective development of the plant, the season, whether propitious or unfavorable, strength of the soil and amount of fertilizing material applied. On medium soils, in ordinary seasons, the first topping should be from ten to thirteen leaves—rarely more—for brights. For sweet fillers from nine to ten, and for dark rich shipping, from eight to nine leaves are enough. As the season advances reduce the number of leaves accordingly; remembering that quality more than quantity regulates returns.

Worming and Suckering.

Many devices have been resorted to in order to lessen the number and mitigate the ravages of the horn-worm, but the lack of general and continued efforts from year to year has brought only partial relief. Some years they come in great numbers, and despite the best efforts of the planter, seriously damage his crop. Perhaps the next year, they are few and give him no trouble. It is the nature of this insect to raise at least

two broods during the year. The hawk-moth or tobacco fly usually makes its appearance in Virginia in the month of May. The eggs, deposited by the first moths, hatch out in from five to seven days, larvæ or worms. The worm sheds its outer skin twice before it gets its growth. The growing stage of the worm lasts from twenty-five to thirty days, and after it has attained its growth, it gorges itself a few days longer, and then crawls or burrows into the ground, where it soon passes into the pupa state; and after some twenty-three or twenty-five days from the time of its crawling into the ground the pupa sends forth a moth to lay more eggs and hatch out more worms. Each moth is capable of laying on an average two hundred eggs. So that for every moth in May we may reasonably expect at least one hundred worms of the first brood; and if none of these are destroyed but all allowed to change to moths and these latter to raise a horde of worms, what wonder that the second brood sometimes appears in such countless numbers as to defy all efforts to destroy them before they have ruined the crop. Every moth ought to be destroyed as they appear; and this may be done to great extent by injecting a few drops of sweetened Cobalt into the flowers of the Petunia, Honey-Suckle or Jamestown (Jimpson) weed, which will give them their final quietus. But this hunt for the moth is not general, and if it were some would escape. But if every planter would wage a war of extermination on the *first brood* of worms—unfortunately a thing rarely done—they would never appear in such unconquerable hordes later in the season. The suckers should be pulled off every week as they appear, and ought never to be permitted to get over two inches long; for if permitted to grow large they abstract much that would otherwise go to perfect a rich, silky leaf. No planter need expect a crop of fine grade who does not pull off the suckers while small, and prevent the horn worms from riddling the leaves.

Cutting and Housing.

Do not be in a hurry to begin cutting your tobacco until it is ripe, and enough fully and uniformly ripe to fill a barn. A thin butcher or shoe knife, well sharpened, and wrapt with a soft cloth around the handle and extending an inch along the blade, will do the work effectually and be easy to the hand. Try it. Put knives into the hands of experienced cutters only—men who know ripe tobacco, and will select plants uniform in color and texture, and will cut no other. Have your sticks all ready in the field, and placed in piles convenient—sticking a stick vertical in the ground over each pile that they may be more easily found when wanted. Pine sticks, rived three-fourths of an inch by one and one-fourth inch, and four and one-half feet long, drawn smooth, are best.

Start together two cutters and one stick-holder,—the cutters carrying two rows each and the stick-holder walking between them. The cutter takes hold of the plant with his left hand at the top near where the knife enters the stalk; with his right he splits the stalk down the centre (observing to guide the knife so as not to sever the leaves,) to within three inches of the point he intends to sever the stalk from the hill; and as the knife descends, his left hand follows the slit or opening, and when the plant is severed from the hill, by a dexterous movement of the left hand the plant is straddled across the stick in the hands of the holder. When the stick has received about six medium plants, if intended for brights, it is ready to go to the barn, either carried by hand if near, or hauled on a wagon if distant. If it is necessary to use the wagon, prepare a bed sixteen feet long to hold three coops or piles, on which place the tobacco as cut, and after placing twenty-five or thirty sticks of cut tobacco on each coop, drive to the barn to be unloaded.

Tobacco suitable for brights is best handled in this way, as it is bruised less than if handled by any other mode. Try it planters: and *know* for yourselves. Very heavy tobacco will break less if, after being cut by the above mode, the sticks are placed gently on the ground and the plants allowed to wilt before being removed to the barn. But tobacco of medium size bruises less to handle it without wilting. Cutting and housing by this mode you never have any sun-burned tobacco. For brights, it has been found best to commence curing at once, as soon as the barn can be filled.

“Sun Cured.”

Just here it may be well to give our practice in sun-curing. If the crop is too rich and coarse for brights, then it may be good policy to cure it sweet. To do this properly, erect scaffolds at or near the barns, on which place the tobacco as soon as cut. But some, in order to obviate the hauling of heavy green tobacco, place the scaffolds in or near the tobacco field. But it is never safe to scaffold tobacco away from the barn; for after the leaf is partially dry it ought never to be caught out in the rain; which may happen if the tobacco is placed on scaffolds away from the barn. When rain threatens, that on scaffolds near the barn may very soon be placed out of danger, but not so that on scaffolds afar off.

But flue-cured fillers command nearly or quite as much as sun-cured, and the risk is much less.

To cure fillers with flues, let the tobacco be placed in the barn as soon as cut, and raise the heat in the barn to eighty-five or ninety degrees Fahrenheit, and then go about other business. Kindle fires in the flues every morning, raising the heat to ninety degrees, and then leave as before, and

continue to do this for four or five days until the tobacco is thoroughly yellowed. If the tobacco has much sap, it may be necessary to continue the yellowing process from five to seven days to yellow properly. When the leaves have assumed a mottled, piebald appearance, run the heat to one hundred degrees and let it remain at that point for three or four hours. Then raise the heat two and a half degrees an hour until one hundred and thirty is reached. Keep the heat at this point until the leaf is cured, and then move up gradually to one hundred and seventy or one hundred and eighty, and thus cure stalk and stem. If cured properly, there will be much of the leaf *mahogany*, while the remainder will run from a bright dapple to a cherry red.

“ Shipping.”

Dark heavy shipping, and nothing which does not possess size and substance is fit for this grade, may be cured with flues better than in any other way. Smoke from the open wood fire is objectionable, and with the flue you get the heat, which is all that is wanted, without the smoke. Curing with open wood fires belongs to the past, and none but the old bourbons will continue the old practice, because they know no better. Taste and fashion are against smoke, and nothing else is needed to banish the old and recommend the new mode. If a dark color is desired, which is not so fashionable as formerly, it can be secured as easily over flues as over wood fires. But the world wants colory tobacco, and this can be produced certainly better with the flue than in any other way. Besides, by the flue, the leaf is cured sweet and free from smoke or soot.

A skillful curer can produce the colors most in demand, and by the flue, better and with more certainty than in any other way. The main object of the author is to induce planters who have never used flues to try them for all grades.

Curing “Bright Yellow.”

There are two modes for curing yellow tobacco: one with charcoal and the other with flues. The first is the primitive mode, but is gradually giving place to the latter, which is cheaper and more efficient, and is being adopted by most of our best planters. The chief agent in either mode is heat—a dry, curing heat—to expel the sap from the leaves, stems and stalks of the plants, and catch the color, *yellow*, next to Nature’s color, green, and to *fix* it indelibly. This is the *science* of curing *yellow* tobacco. There are seven prismatic colors—that of tobacco occupying the middle of the prism. By the process of nature, leaves in drying descend in color from green, first to yellow, then orange, then red, and finally lose all color

as they go to decay. Now a quick dry heat, so regulated as to dry out the leaf and catch the yellow, and fix it, is the *modus operandi* of curing fancy tobacco.

A barn containing seven hundred sticks of green tobacco, six medium plants on each stick, holds along with the tobacco four thousand five hundred to five thousand pounds of water, which must be expelled in from eighty-five to one hundred hours.

Charcoal produces an open, dry heat, well suited for the purpose; but its preparation is costly, its use tedious, dirty and laborious, and it deposits a black dust on the leaf that is objectionable. With flues constructed of stone or brick, and covered with sheet iron, or patent ones with furnace and pipes, the wood is burned as cut in the forest or old field, and the whole process of curing is less costly and less laborious, and the tobacco cured therewith free from dust, and has a sweeter flavor. The flue process possesses so many advantages over all other modes of curing tobacco, is so safe, if properly constructed, and free from smoke, that when its merits become better known, it will come into general use and supersede all other modes.

The first step in curing is called the STEAMING OR YELLOWING process. Medium tobacco will require from twenty-four to thirty hours steaming at about ninety degrees to yellow sufficiently; but tobacco with more or less sap, larger or smaller, will require a longer or shorter time to yellow. Here the judgment of the curer must be his guide. Inexperienced planters would do well to procure the services of an expert curer, if they have tobacco suitable for fine yellow. The planter saves in the enhanced value of his crop many times the money paid to the curer, and besides, by close attention, he may learn in one season to cure well himself. Theory alone, however good, and directions, however minute, will not do here, but it is *practice* that must qualify one to cure well.

When it is remembered that no two plants are exactly alike, no two barns precisely similar in every particular, and that the weather may change every hour, is it reasonable that a fixed programme can be followed for every curing with any reasonable hope of success? The experienced know better. On work so variable, only general directions can be given.

The next step is called FIXING THE COLOR. When the tobacco is sufficiently yellowed, the best leaves of a uniform yellow, and the greener ones of a light pea-green color, it is time to advance the heat to one hundred degrees; observing the leaves closely to detect sweating, which will soon redden and spoil the color, unless driven off. To do this, open the door and let it stand open, and if after an hour or more the sweat has not

disappeared, open a space between the logs on opposite sides of the barn to let in more air, and permit it to remain open until the tobacco has dried off all appearance of the sweat. Right at this point more curings are spoiled than at any other stage of the process. It may be well to remember what is a fact, that at least five curings are spoiled by proceeding too *fast*, to one failure from going too *slow*. Now stick a pin here.

But to go back to the barn where we have just dried the leaf, and where the thermometer indicates a fall of five to ten degrees—but this need not concern the curer to put him out of hope, for a little cooling under the circumstances was necessary—we close up the opening and raise the heat to one hundred degrees. But a skillful curer, detects the first indications of sweat, and prevents it by regulating the heat.

Keep the heat at one hundred degrees for four hours, and then advance two and a half degrees every two hours until one hundred and ten degrees are reached. Here you have reached the most critical point in the difficult process of curing bright tobacco. The condition and appearance of the tobacco must now be the curer's guide. No one can successfully cure tobacco, until he can distinguish the effects of too much or too little heat in the appearance of the leaf. Too little heat, in fixing the color, operates to stain the *face* side of the leaf a dull brown color, and is called "sponging," and may be known to the novice by its appearance only on the *face side* of the leaf. Too much heat reddens the leaf, first around the edge and then in spots, which are visible on *both sides*. Now, to prevent sponging on the one hand and spotting on the other, is the aim of the experienced curer. No definite time can be laid down to run from one hundred and ten to one hundred and twenty degrees. Sometimes four hours will suffice, then again eight hours is fast enough. While it is usual at this stage to advance about five degrees every two hours for medium tobacco, the condition of the tobacco often indicates to the practiced eye the necessity for slower or faster movement. But it is safe not to advance above one hundred and ten degrees until the tails begin to curl up at the ends. Arrived at one hundred and twenty or one hundred and twenty-five degrees, this is the CURING process. The heat should remain at or near these figures until the leaf is cured, which will require from six to eight hours, according to the amount of sap in the leaf to be expelled. When the leaf appears to be cured, advance five degrees every hour up to one hundred and seventy degrees and remain until stalk and stem are thoroughly cured. To run above one hundred and eighty degrees is to endanger scorching the tobacco, and perhaps burning barn and tobacco.

To recapitulate :

First. Yellowing process,	90 degrees, from 24 to 30 hours.
Second. Fixing Color,	100 degrees, 4 hours.
“ “ “	100 to 110 2½ degrees every 2 hours.
“ “ “	110 to 120, 4 to 8 hours.
Third. Curing the leaf,	120 or 125, 6 to 8 hours.

Fourth. Curing stalk and stem, 125 to 170, 5 degrees an hour. And continue at one hundred and seventy degrees until stalk and stem are thoroughly killed and dry, which usually requires from twelve to fifteen hours.

After curing, as soon as the tobacco is sufficiently soft to move, you may run it up in the roof of the barn and crowd it close, or if the barn is needed for other curings, the tobacco may be carried to the storage barn or bulked down in any dry house on the premises. But be sure that nothing is bulked with green stalks or swelled stems, for if such are placed down in bulk it will be sure to heat and utterly ruin.

Ordering.

If, after the tobacco is cured, the weather remains dry and it fails to get soft readily, so that it can be moved, it may be brought in order in the following way: Place green bushes with the leaves on over the floor and sprinkle water over them copiously; if the tobacco is very dry and the atmosphere contains but little moisture, and if the weather is cool, a little fire kindled in the flues will assist in making the tobacco soft. Straw wet or made so will answer the same purpose. If the weather is damp there will be no necessity to use either straw, brush or water. But when it is necessary to use any means to order tobacco, it is best to apply them in the afternoon, that the tobacco may be removed the next morning.

If the weather remains warm and damp or rainy, tobacco that remains hanging will be apt to change color unless dried out by flues or charcoal. When this becomes necessary build small fires at first and raise the heat gradually.

Stripping.

Tobacco should never be stripped from the stalks except in pliable order, and the leaves on every plant should be carefully assorted and every grade tied up separately. Usually there will be three grades of leaf, assorted with reference to color and size, and two of lugs. Of leaf tie six to eight leaves in the bundle, and of lugs eight to ten. As fast as you strip either hang the "hands" on sticks—twenty-five to each stick—and hang up or bulk down in two layers, the heads of hands or bundles facing outward. The latter mode is best if you intend to sell in winter order, *loose* on the warehouse floors. If bulked down, watch frequently

to see that it does not heat. If the bulk becomes warm it must be broken up, aired and rebulked, or hung up if too soft. It is safer always to hang up as soon as stripped, unless you design to sell soon, and strike down in "safe keeping order" in spring or summer. It is considered in "safe order" when the leaf is pliable and the stem will crack half way down from the tie.

Packing.

If you sell loose, deliver in large uniform piles—such will cost less and your tobacco bring more in price. But to sell in a distant market, pack in tierces,—half hogsheads make the best and cheapest,—to weigh about four hundred pounds net, taking care not to press the tobacco so as to bruise it, or pack it too closely together. The best leaf is wanted for wrappers, and it must open easily when shaken in the hand. Pack one grade only in each tierce, uniform in color and length; but if it becomes necessary to put more than one grade in a tierce, place strips of paper or straw between to mark and separate them. Pack honestly, for honesty is always the best policy.

If your tobacco is fine, sound and nicely handled, you'll have the satisfaction of getting at the least a remunerating price for it, although poor and nondescript stock may be selling for less than the cost of production. The world is now full of low grades of tobacco. We must plant less surface, manure heavier, and cultivate and manage better, if we would get better prices.

The following extracts, taken from the *Border Review*, published in Granville county, North Carolina, where some of the finest brights in the world are produced, are here given that the reader may select a programme to suit his judgment and preference:

The Tobacco Curing Process, Recorded at the Barn Door.

Building eighteen feet square, four firing tiers, fitted up with sheet iron pipe flues, manufactured by R. G. Wyatt, Henderson, N. C.

No. 1, filled with about four hundred and fifty sticks of tobacco, grown on old field, fertilized with "Anchor Brand," at the rate of two hundred pounds per acre. Bright yellow on the hill. Leaf large but light and thin, due to imperfect cultivation.

Started fires and ran up to ninety degrees in six hours; then to one hundred in six more; then to one hundred and ten in six—leaf yellow at end of eighteen hours. Then up to one hundred and twenty in six hours; to one hundred and twenty-five in six; to one hundred and thirty in six; then to one hundred and forty in three hours, and remained at that temperature six hours; leaf now about cured; then to one hundred and fifty in three hours, and remained there three hours; then to one hundred and seventy-five in twelve hours, and continued there twelve hours. A perfect cure in seventy-two hours, and bright lemon color.

No. 2 is a building of the same size, fitted up with the same kind of flues, manufactured by Allen & Co., Henderson, N. C. Barn filled with same number of sticks of tobacco, grown on same land, but some larger and thicker leaf.

Started fires and ran up to ninety-five degrees in eight hours; then to one hundred in six hours; then to one hundred and ten in ten hours—leaf yellow; then to one hundred and twenty in eight hours; to one hundred and thirty in six; to one hundred and forty in six, and remaining from one hundred and forty to one hundred and fifty in eighteen hours, then to one hundred and seventy-five in six hours, and continued there about twelve hours. Stalk, stem and leaf fully cured at the expiration of eighty hours. Leaf bright lemon color. Success.

The difference in the time of curing was due to the size of tobacco. The flues of both manufacturers are equally efficient, and require a very small quantity of wood.

An opening ten inches wide is left at the top, whole length of barn, and closed after the leaf is cured. This removes all danger of "sweating."

THE HESTER PROCESS.

Start fires and go to ninety or one hundred, and stand twenty-four to thirty hours; then to one hundred and ten in five or six hours, and stand till the desired color is obtained; then go up five degrees every two and a half hours till one-hundred and thirty is reached, and stand till leaf is cured, usually from eighteen to twenty-four hours; then five degrees every two hours till one hundred and eighty is reached, and standing three hours drop to one hundred and sixty or one hundred and ninety, and stand till stalk is cured. Whole time about ninety-six hours. The process of Mr. Samuel Collis is about the same as above.

And now, a suggestion to the reader by way of conclusion. If you have not a large stock of patience and perseverance, with a will to learn, and a resolution to keep trying until you succeed, you have missed your calling, and had better try something else. For there is no royal road to success in bright tobacco raising. But if you possess the true essentials—have the true and lasting pluck—you will succeed, soon or late, and what is better, reap a full reward for honest, faithful toil.

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VIRGINIA SEED-LEAF.

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