with thumb and forefinger pinch the top or button off below 2 or 3 leaves; if well out in top, break off several inches down from the button and 4 or 5 leaves below it. 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 3–4 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 2 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."

Another process, called "priming" by Schneider, is thus described by him. "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 at which this priming should be done, depends upon the variety grown and upon the time at which the work is done: 4–6 inches is the right distance. This priming is not done by every one. One farmer may

practise it, while his neighbour 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, 2nd, 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 8, 10, 12, 14, or 16 leaves, according to his judgment, that is, he allows so many leaves to remain as will have a good fair chance of reaching maturity."

As Bishop remarks, cultivators are not agreed on the time and place for topping tobacco plants. "Some favour 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 7 inches wide, leaving on the stalk from 15 to 18 leaves. This will leave the stalks about 2½ 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 5 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 worms. 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. As soon as the top is broken off, the sap is thrown into the leaves, causing them to expand rapidly. In the meantime 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."

Priming is defined by Thomas as "pulling off the bottom leaves to the number of 4 or 5," and he says that any plant large enough to be topped ought to be primed first. All conditions being favourable, he considers that in Ohio, 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 16 leaves, others 10, and a great many at 8. My own opinion is, that a plant topped at 10 will weigh as much as one at 16, topped at the same time, and on the same kind of land. 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 1 inch long they can be pulled or rubbed off, and it should surely be

done. In about a week or 10 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."

CHAPTER III.

CURING.

GROWING tobacco is only half the battle. Having raised a crop to a state of perfection, the next object is to cure it for the market. This branch of the business demands fully as much care and skill as the purely agricultural part preceding it, and is perhaps equally influenced by the weather. The best crop ever grown may be completely spoiled by injudicious conduct during the drying, &c., while a growth of moderate quality may be made the most of by extra care and trouble.

Harvesting.—The leaf being matured, it should be harvested only after the dew is off the plants, and not on a rainy day. There are two modes of harvesting—gathering the leaves singly, and cutting down the whole plant. Gathering single leaves admits of removing them from the plant as they ripen; the bottom leaves are removed first, and the top ones are left some time longer, until they have attained full maturity. The cultivator is thereby enabled to gather his crop when it possesses the greatest value. This plan necessitates, however, a great amount of labour, and, in a hot climate, the single leaves are apt to dry so rapidly as not to attain a proper colour, unless stacked early in heaps. But stacking in heaps involves great risk of the leaves heating too much, and developing a bad flavour, whereby the tobacco loses more or less in value. For Indian circumstances generally,

cutting the whole plants is better than gathering the leaves singly.

For cutting down the plants, a long knife or chopper is used. A man takes the plant with his left hand about 9 inches from the ground, and with the knife in his right hand, cuts through the stem of the plant just above the ground. If the plants are sufficiently "wilted," he may lay them on the ground and proceed to cut down others; if, however, they are so brittle as to cause the leaves to be injured by laying them down, he should give them to another person, to carry them at once under shade. During bright weather, the plants should not be allowed to lie exposed to the sun on the ground, or they will become sun-burnt, and lose in value. A temporary shed should be erected; it might be simply a light roof of palm-leaves or thatched straw, supported by poles; a large tree standing near will also serve the purpose. Under this shade, parallel rows of posts are put up, and on the posts, light poles or strong bamboos are fixed horizontally. The parallel lines should be about 4½ feet apart and the horizontal poles about 4–5 feet from the ground, according to the height of the tobacco plants. Rods are cut in lengths of 5 feet, and laid over the parallel bars, so that they will project about 3 inches at each end. A very light and convenient shelter sometimes used for sun-drying in America, consists of rods laid crosswise, supported on four upright poles, and covered with a sloping roof of boards. The plants that have been cut are immediately brought into the shade, tied in pairs, and hung across the rods. They must not be hung so close as to press each other, and the rods should therefore be

6–12 inches apart. The framework should be so large as to allow of one day's cutting being hung. The plants are left thus for one day, during which time they will be wilted sufficiently to allow handling without tearing the leaves. In a very dry wind, mats or other cover should be laid against the plants most exposed to it, or their leaves will dry rapidly, shrivel up, and remain green. Next day the leaves are carted to the drying-shed. A cart supplied with a framework, in order that the plants may be hung as they were hung under the shade, is the best means. Perpendicular uprights at each corner of a cart or waggon are fixed together by horizontal poles. The plants may be hung so close as not to press heavily on each other, 200–400 being brought to the shed at one time.

As a general rule, Judson Popenoe thinks "tobacco should be cut in about 2 weeks from topping, at which time the leaves assume a spotted appearance and appear to have fulled 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 3 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 11 o'clock, unless it is cloudy; from 11 to 2 o'clock the direct rays of the sun on the tobacco, after it is cut, will burn the leaves in 20 minutes; after 2 P. M., as a general thing, there is no danger of such burning, the sun's rays not striking direct on the tobacco. Have a waggon at hand, with stiff boards, 12 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 waggon on the front end, lapping the tobacco the same as loading fodder, keeping the butts out on both sides—build about 2 feet high, and so on until loaded."

Any one accustomed to the cultivation of the crop, says Bishop, "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 1st to the 15th of Sep-

tember; 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 2–3 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 facilitato 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."

In the words of Schneider, "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 6 inches long and ½ inch or less square into the stalk, about 4 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 3–4 feet long. Spearing is the plan I pursue; because it is neat enough and decidedly the quickest plan. A rough block, with a hole mortised 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."

Another planter observes that "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 10 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. 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 5 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 labour 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 2 hours; others, in a longer time, according to the degree of sun-heat."

Bishop tells us that 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 condition of the leaf, according to Pursley, may be judged in the following manner:—"When the tobacco is

ripe, it has a yellow faded colour, 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 4 feet 6 inches in length, 2 inches wide, and 1 inch thick. A stick of these dimensions will hold 8 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 8 stalks each, placing the butts of the stalks towards the sun, to prevent it from sun-burning. When it is sun-burnt it turns black, and it cannot be cured any other colour 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 6 inches from the butt end; then take the spear off and take up the stick, and shake the tobacco out straight, and set the stick up with the butts towards the sun."

Some tobacco-growers, remarks Pursley, "prefer splitting the stalk from the top down to within about 6 inches of the butt, then hang it on the sticks. But I cannot agree with them, for it is more difficult to handle, and is apt to slip off 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 4 feet apart, and 4–5 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."

The maturity of tobacco is defined by Schneider as when the leaves, which have hitherto been green, on holding them "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 waggon 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 butt-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 6–8 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 is recommended by Schneider for 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