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."

Perry Hull's instructions commence with a caution that the plant should never be cut while the dew is on the leaves ; " but wait until it is off, say 10 o'clock, and what tobacco is cut from that time until 2 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, &c., 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 axe, 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 butt 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 anything but fillers."

When the plants are 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 5 inches in width. If sawed pieces are used, saw them just that; if poles are used, see that they are about that; for if anything 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. 9 on p. 95.) It requires two hands to hang them, one to hand them, another to tie them. The poles should be about 18 inches apart, and the number hung upon a 12-foot pole will depend upon the size, from 24 to 30, so regulating them, that when thoroughly wilted, they will scarcely touch each other. If hung thicker than this, a little unfavourable 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 colour; 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."

White estimates that in "the course of 2 or 3 weeks after topping, the plants will begin to ripen, which may be known by the change in colour 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 1 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 2 or 3 leaves from the top and lean it back on the row; now, with the point of your cutter held in the right hand 2–3 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 butts 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 butts 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 2 rows, and you have the next 2 with the butts the other way; take these and lay the tips directly opposite those first turned, and you have an alley, with the butts 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 waggon, 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 butts 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."

Libhart alludes to the existence of several ways of hanging cut tobacco plants, but specifies the two following as the best and shortest: "first, splitting and hanging it upon laths 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 1 foot long and 3 inches broad, the sharp end not bevelled 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 centre 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 3–4 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

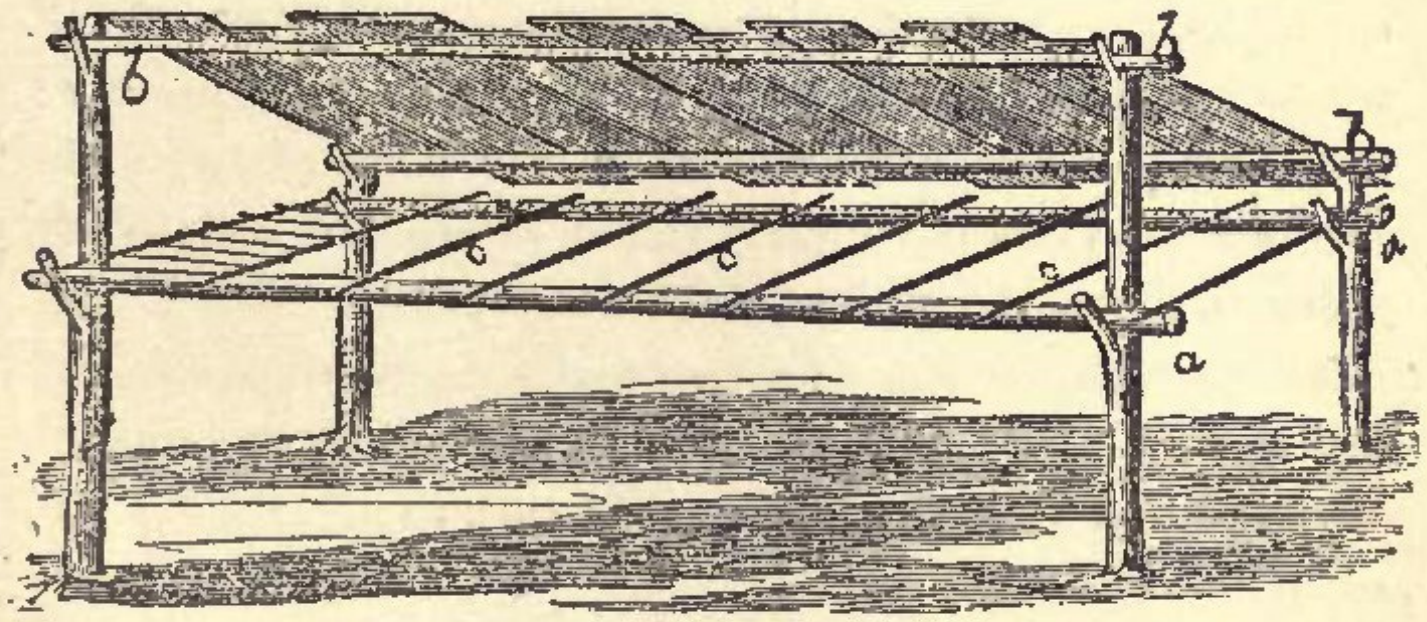
down, and then when the sun has sufficiently wilted the leaves, the stalk may be cut and left to lie until it will bear handling without breaking the leaves. The lath being previously prepared, 4 feet in length and about 1 inch in thickness on one edge, and ½ inch on the other, and 2 inches broad (or 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 6–8 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 waggon and hauled to the drying-shed."

Before the tobacco is ready for harvesting, Hudson suggests the preparation of "a supply of sticks for hanging. Sticks 4 feet long and 1 inch square are most convenient; 12 sticks to every 100 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 Fig. 8. The poles *a* being for the support of the smaller poles *c*, upon which the tobacco-sticks are placed, and *b* for the cover, when necessary that it should be shedded."

Mitjen's translator gives the following account of the

Cuban practice. "Tobacco should be cut during the wane of the moon; and although most *vegueros* say that it is impossible to do this, because the leaves commence to ripen both during the new and the full moon, and would be over-ripe before its wane, we can, nevertheless, assert that we know persons who never cut their tobacco during the first quarter, or when rain has made it again green. These persons have never experienced any difficulty; rather, on the contrary, they are those who always obtain

FIG. 8.



the best prices and the greatest money results. Cutting tobacco during the first quarter of the moon, or when vegetation is renewed in the leaf, is one of the principal reasons why the leaf becomes pricked with holes, and this very frequently even before it is taken from the plantation to the market. The system generally observed is, in cutting tobacco, to take off, at once, all those parts of the plants which may be really or apparently ripe, and to load up the poles indiscriminately, without any division between the pairs of leaves (*mancuernas*). This system is

highly prejudicial. The leaves of the same plant are not all of the same quality, neither do they all at the same time acquire the same degree of ripeness. Those of the crown, or the pairs at the top of the plant, immediately next the flower or seed, receive the sun direct on their upper surface, and are the first to ripen, whereas the lower ones, being shaded by the upper ones, remain still in an unripe state; moreover, the lower leaves at the foot of the plant, and even those of the fifth or fourth pairs (*mancuernas*), compared with those of the first, second, and third pairs, are inferior in quality, and, comparatively speaking, may be termed leaves without substance. The contact of these leaves with the upper ones frequently occasions putrid fermentation on the poles (*cujes*) and in the packs (this is vulgarly called *sahorno*), especially if there is much dampness in the atmosphere. When this misfortune happens in a tobacco curing-house all the weak leaves will be lost, and the strong ones will be so injured that the best quality of *capa* would turn to *tripa*, and that of bad consistency.

"The cause of this destruction, from which the *veguero* suffers more or less in the best of crops, may be easily explained. The curing of tobacco is nothing more than a series of fermentations. It ferments on the poles (*cujes*), ferments in the heaps (*pilon*), and ferments in the bales. All these fermentations are requisite for obtaining a good colour and smell, but it is better that each quality or consistency of tobacco should ferment apart. Tobacco of good strong quality, which is that produced by the upper leaves, naturally suffers a much stronger fermentation than the weak ones, because the former contain a larger

proportion of juice; as the lower leaves have less substance, the fermentation is naturally weaker and lasts less time; but if the leaves are put in contact with those of a stronger quality, the fermentation would be kept up by the latter, and it would indispensably result that the weak ones would rot, and their contact be injurious to the stronger ones. But by separating, in the field, the leaves of different consistencies which each tobacco stalk produces, this evil is avoided, and the dry rot is rendered impossible, unless no care whatsoever is given in the curing-house. Therefore, the mode of reaping should be reformed. It is best to cut the tobacco when it is thoroughly ripe, and in the wane of the moon, making this operation in three sections or cuts, each of which should always be placed on separate poles, in separate rooms, heaps, and carefully picked.

"The first cut should consist only of the pair of crown leaves, and for the poles which they are hung on, a special corner in the curing-house should be set apart. After the first cutting, and 3 or 4 days of sun, the second and third pairs of leaves will be ripe, and may be cut at one and the same time, care being taken to place them on separate poles and rooms; and, lastly, 3 or 4 days after the second cutting, the remainder of the leaves may be gathered, but the last leaf near the ground should not be taken, as it has no consistency, and therefore no value as tobacco, and only serves to increase the work and give discredit to the class of tobacco.

"Tobacco should be cut during the hottest part of the day; each pair of leaves should be placed on the ground face downwards, so that the sun may strike on the under

part of the leaf, and in this state it should be allowed to remain a sufficient length of time to wither, after which the pairs of leaves (*mancuernas*) should be picked up one by one, placed evenly on the arm, with the upper side of the leaf inwards, and each armful should be carried to and placed on the poles (*cujes*), which should be prepared beforehand near the spot where the tobacco is being cut. Two forked sticks should be placed strongly in the ground, and on these the pole should rest. After the tobacco leaves have been placed carefully on these poles and been allowed to wither, they should be carried to the curing-house before the sun has time to dry them. This operation must be performed by two labourers, who can carry each time two poles, placing the end of each on either shoulder, so that, in walking, the leaves on one pole may not cut against those on the other. These poles of leaves, when brought to the curing-house, should be fixed or hung by the points on the lowest stages, but so high that the points of the leaves do not touch the ground, and sufficiently apart one from the other that the leaves may not touch, because, being brought in from the field warmed by the sun, it is not judicious to allow them to touch. When the sun is not sufficiently strong to wither the cut leaves, reaping should not be continued. The tobacco should be so arranged on the poles that the pieces of stalk should gently touch one with the other, but without crowding." However, if the weather should be damp, and the leaves large, space should be left between the pairs.

Drying.—The drying-shed is prepared beforehand to receive the tobacco. When cultivating tobacco on a small

scale, any shed will do, provided that it contains a sufficient number of doors and windows to admit of regulating the circulation of air. A roof made of straw seems to answer very well. The shed should be high enough to admit of hanging 3 rows of tobacco in it, one above the other. The bottom tier for the first row should be about 3–5 feet from the ground, according to the size of the plants, which should not touch the ground; the second tier should be 3–5 feet higher than the first; the third, 3–5 feet higher than the second; the whole being 10–17 feet high from the bottom of the shed to the highest tier. The tiers must be so arranged that the tobacco when hung on the upper tier should not touch that of the lower one, and that the rods on which the tobacco has been hung in the field fit exactly. The windows must face each other, and be placed between the tiers, so that the bottom part of the window is on the same level as the tier. When cultivating on a large scale, the same arrangements are made, but the building is higher, and is provided with a cellar, in which to place the tobacco for the purpose of stripping, &c.

The drying-shed being ready, the plants immediately on arrival at the shed are transferred from the conveyance, on the rods, to the lowest tier. No rule can be given as to the distance the rods should be placed from each other, as it varies according to the species of the plant, the degree of ripeness, and especially the state of the weather. The purpose of hanging the plant here on the lower tier is to cause the leaves to dry gradually, and assume a good yellow colour, and to create a slight fermentation in them, while allowing such a circulation of air between the plants as will facilitate the gradual escape of the moisture from

them, and prevent the injurious development of ammonia and other combinations that give rise to bad flavour in the tobacco. How to attain this, exercises the judgment of the cultivator, who, by frequent examination of the plants, and by careful observation of the changes going on in the leaves, will soon find out the right way.

The rods should be placed closer together—(*a*) when the plants are much wilted on reaching the shed; (*b*) when the air is very dry, and the temperature is high; (*c*) when the leaves of the plant are very thin and contain little water. Plants which have the leaves closely arranged on the stems must be hung farther apart. When the air is very dry, and there is a strong breeze, the windows must be closed. If this is not sufficient, water may be poured on some heaps of sand, to create a moist atmosphere in the shed. When the stems of the plant are very thick, and consequently contain much sap, it is beneficial to open the windows, especially at morning and evening, for some hours, that the wind may pass over the butt-ends. As the windows are situated above the lowest tier, the leaves will not be much affected by it.

The leaves must be examined carefully every day; one plant may progress very well, whereas another close by may decompose too rapidly, and another too slowly. Although no change of weather occur, it may yet be necessary to alter the position of the rods, in order that each plant and leaf may receive air in such a degree as is most conducive to its proper decomposition. Any change in the weather necessitates different arrangements. The plant should remain on the lower tier until the leaves have turned yellow, which will take place within 6–10

days, according to circumstances; after this, they are hung on the upper tiers. There they should be more apart, each plant hanging free. When on the upper tiers, the tobacco may be said to be in the free-hang; and when on the lowest tier, in the close-hang. The object in hanging the plants more apart on the upper tier is to dry them more rapidly there, and for this purpose, the shutters may be opened, unless there be a strong dry wind. The light-yellow colour of the leaves should change into a dark yellow-golden or light-brown colour. After hanging on the upper tier for about a week, the veins of the leaves will be nearly dry, leaving only the midribs pliant. The drying of the leaf and the changing of its colour proceed gradually, commencing from the margin and proceeding to the midrib. At this time, the plants are hung closer together, the evaporation from the leaves being little, and the space and sticks being required. The plants hanging on two or three sticks may be hung on one stick. All the windows may be kept open from this time; the tobacco may also be brought into an open shed, or even hung outside exposed to the sun. In about a week more, the midribs will be entirely dried up, and the tobacco will be fit for stripping. In some climates, it may be necessary to facilitate the drying by the aid of artificial heat. For this purpose, heated air should be conducted into the drying-shed, without the fire, or the products of combustion, being admitted.

Pursley warns tobacco growers that the plant should not be exposed to the weather after it is cut, but 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 are generally built of logs, some have frames. The barn should be made tight up to the tobacco, which should hang about 8 feet from the ground; above this leave cracks or air-holes, sufficient for free ventilation. A barn to hold $2\frac{1}{2}$ acres of tobacco, which is as much as one man can attend to, should be 24 feet square. It should have 5 tiers of poles, the lowest about 6 feet from the ground; these should extend across the barn, and be fastened at each end into the walls. The poles should be 4 feet apart, and the tiers directly one above another. The sticks which contain the tobacco should be placed within 8 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."

Libhart recommends that the shed "be constructed of timbers strong enough to resist storms, and boarded 'up and down.' About every 3 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."

The housing of the crop proceeds, says Dennis, "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 waggon 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 colour and quality of tobacco may be improved by hanging it closely and curing by artificial heat, watching that it does not become 'funked,' or moulded, while curing; but the best plan for a beginner is to dry it safely, and make