shed. With a good kind of tobacco, grown on light, friable soil, treated as described, little care will be needed, after the leaves are dried and stripped. By the drying process, the leaves will have undergone a slow fermentation, which makes it unnecessary to watch or guide a regular fermentation afterwards, hence bulking and fermenting, as generally understood, are not required.

After being made into hands, the tobacco is put into heaps (bulked) before it again dries. Every evening, the tobacco that has been stripped during the day is bulked; but if the weather be very dry, it must be bulked as soon as a certain number of hands is ready. The heaps should be made 4–8 feet square and 4–8 feet high; all the stalks are outside, and the whole is covered by mats, &c., to check evaporation. The drier the tobacco, the larger must the heaps be made, to encourage a slight fermentation. The extent of the fermentation can be easily controlled. If the colour of the leaves is not uniform, or if it is desired to give them a browner colour, the heaps must be made large, and a somewhat moist atmosphere is required in the storing-room. This will cause fermentation to set in after a short time, and the heat to rise after some days, so much so that rebulking is required, which is done by putting the top leaves of the old heap at the bottom of the new one. Under such circumstances, the heap must be frequently examined during the few first weeks, to prevent overheating. It is advisable to rebulk the tobacco also, even when not much heated, after the first fourteen days, and again a month later, to ascertain the exact state in which it is. Sometimes the tobacco becomes mouldy; this

occurs especially with tobacco which has been manured with chlorides, which cause it to become more hygroscopic than when manured otherwise. If this occurs, the mould must be brushed off, and, if necessary, the tobacco be dried. The tobacco may now remain heaped in the store-room until there is a chance for sale. It must be remembered, however, that the best time for selling varies very much. Some tobacco is fit for smoking a few weeks after drying, whereas others may burn very badly at that time, yet become a good burning article after being stored for several months.

After assorting, Perry Hull advises that the tobacco "be corded up awhile, in a dry place, that the butts may be thoroughly cured before packing in the cases. The pile is made with the butts out, and tips interlapping in the middle, at every other course, at the ends turning the butts toward the end. Get upon the pile upon the knees, take hold of the butt of a hank with one hand, drawing the leaves at the tip together with the other, and placing it upon the pile in that position, immediately putting the knee upon it. After the pile is finished, it should be covered over with boards, to keep it from drying up, and a few days before packing into the cases, should be well weighted down, which will save a great deal of pressing at that time. Such a pile should be made only about 2½–3 feet high, and then closely watched to prevent a premature sweat, which often, if the weather be mild, will take place in such a pile, which will not be sufficient to render the tobacco fit for working, but which, if not intercepted at the commencement, will be sufficient to prevent a proper sweat afterwards. Check,

therefore, the first symptoms of heat in such a pile, by opening the pile, and repacking it, shaking out the hanks and giving them time to cool off."

Bowie gives a caution that the tobacco "should not be too moist or 'high,' as it is termed, when put in stalk bulk, or it will get warm, the leaves stick to the stalk, get a bad smell, and change colour; besides, if left too long, it will rot. To bulk tobacco requires judgment and neatness. Two logs should be laid parallel to each other, about 30 inches apart, and the space between them filled with sticks for the purpose of keeping the tobacco from the dampness of the ground. The bundles are then taken one at a time, spread out and smoothed down, which is most conveniently done by putting it against the breast and stroking the leaves downward smooth and straight with the right hand. It is then passed, two bundles at a time, to the man bulking. He takes them and lays them down and presses them with his hands; they are laid, two at a time, in a straight line—the broad part of the bundles slightly projecting over the next two—and two rows of bundles are put in a bulk, both rows carried on together, the heads being on the outside, and the tails just lapping one over the other in regular succession. The bulk, when carried up to a convenient height, should have a few sticks laid across to keep it in place. It must often be examined, and if getting warm it ought to be immediately changed and laid down in another bulk of less height, and not pressed as it is laid down; this is called 'wind-rowing'; being loose and open, it admits the air between the rows of bundles, hence the term. The next process in this troublesome, but

beautiful crop, is to 'condition' it for 'packing.' The 'bright,' 'yellow,' and 'second' tobacco will condition, but most generally in such bulks as I have just described, but it is best to hang up the 'dull' as soon almost as stripped. If the bright or second do not dry thoroughly in the bulks, that should also be hung up in the house to become well dried. To properly hang up tobacco to condition, small-sized sticks should be procured, and each one nicely smoothed with the drawing-knife, and kept for that purpose. After it has once been perfectly dry, either hanging up or in bulks—so dry that the heads are easily knocked off, and the shoulders of the bundles crack upon pressure like pipe-stems—it should be taken down, or if in bulks, removed, the first soft, moist spell of weather, as soon as it is soft and yielding enough, as it will become too dry to handle without crumbling or breaking, and it must be put in 4 or 6 row bulks of any convenient length and height, the higher the better, laid down close, so that as little of the leaves or shoulders as possible be exposed on the outside of the bulk. When completed put sticks and logs of wood, &c., on the top so as to weigh it down. Here it will keep sweet and in nice order for packing at any time, no matter what the weather be, if it was conditioned properly, it will not change a particle while in the condition-bulk."

Packing.—Tobacco in America is commonly packed in barrels, the layers being at right angles to each other alternately, and the butt-ends being always towards the outside. The usual size is about 4 feet 6 inches deep, 3 feet 6 inches in diameter at one end, and 3 feet 4 inches at the other, to enable the contents to be uncovered for

examination without disturbing the mass. The packing is effected under considerable hydraulic pressure. Elsewhere all kinds of packages are employed, and their weights are very various.

In Bishop's opinion the best size for boxes is the following:—"3 feet 6 inches long, 2 feet 4 inches wide, 2 feet 6 inches in depth, manufactured from planed pine boards, 1 inch in thickness, with standards 2 inches square, inside at each corner to nail to. Having thus your boxes prepared, and the tobacco in good condition, the first soft, mild day that comes proceed to packing; the bundles or 'hands' of tobacco must be taken from the bulk and laid in courses in the box, laying the butts of the 'hands' to the outside of the box, allowing the ends to lap over each other, and endeavouring to keep the centre of the box a little higher than the edges—these courses to be packed as solid as possible by the hand. If any of the bundles are 'soft' or have an ill smell, they must be exposed to the fire or sun until sweet and dry before being packed. When the box is nearly full, a false cover (just large enough to slip inside the box) must be placed on the tobacco, and pressed as heavily as possible with the lever or screw power; remove the pressure and re-fill, pressure finally being applied to the real cover, which may then be tacked down. A box of the size I have mentioned, when filled, should contain about 400 lb. of tobacco, and thus packed, will keep for years."

Another planter considers that parcels of "less than 1500 lb. may be carried to market almost in any way; but more than that should be 'prized' in hogsheads. Several farmers might combine their crops for prizing.

As to the size, form, and materials of the hogsheads. In Virginia, the size of the hogsheads is prescribed by law. They must be made of seasoned pine or poplar. They must be 4 feet 6 inches long; 3 feet 6 inches in diameter, at one end, and 3 feet 4 inches at the other. This difference of diameter is to allow the tobacco to be inspected. This may be something new to persons of the North, therefore I will explain the mode of inspecting tobacco in the hogshead. An inspector is appointed by law to inspect or examine the tobacco prized in hogsheads. His first step is, to place the hogshead big end upward. He then removes the lining, and takes out the head. He next inverts the position of the hogshead, that is, puts the little end up, and raises it entirely from the tobacco. The mass of prized tobacco stands before him without a covering. The outside may be all right, but his sworn duty is to examine it through and through, as well as round and round. For this purpose he drives an iron bar to the middle, near the top of the mass, prises up and takes out a handful of bundles. He repeats that operation on two other points of the mass. He then inspects or examines the parcels extracted, and rates the whole hogshead according to their quality. The hogshead is replaced and made secure. The hogsheads and the samples taken from them bear corresponding marks, and the former is sold by the latter. The staves of the hogshead must not be wider than 5, nor narrower than 3 inches, $\frac{5}{8}$ inch thick, and dressed on the inside. The heading must be seasoned pine or poplar, and 1 inch thick, with 8 hoops. Such a hogshead will well answer in other States as well as in Virginia.

"Weigh out, say 300 lb. It takes two hands to do this work, one inside the hogshead and the other out. One is called the 'packer,' the other the 'waiter.' The packer so arranges the bundles, in placing them, as to make 4 courses in one layer. Repeat the layers until the 300 lb. are packed. The weight (lever-power) is then applied. After 6 hours, put in 200 lb. more and apply the weight; 6 hours, and so on, until 1300–1500 lb. have been put in. The softer the tobacco, the more of it can be put in a hogshead. If the tobacco is of the first quality, 1500 lb. is enough. But if lower qualities, 1800 lb. can be put in. The finer the quality the less weight it can bear without injury; and *vice versâ*. Having prized the crop, it is ready for market."

According to Pursley, a hogshead "4 feet in length, and 3 feet in diameter, is the medium size; 1000 lb. is considered a full hogshead; but one of the above dimensions can hold 1500 lb. by hard pressing; but this blackens the tobacco, and injures the sale of it. Packing in the hogshead is done by first laying a course or layer of bundles straight across the bottom, keeping the butts even and close together; then fill up on each side of the centre course, placing the butts against the staves; then the butts of the hands that lie against the hogshead should be covered up with 2 or 3 others, pressed closely down. The next centre course should be laid across the first, and done in the same manner as before, and so on, crossing each course in succession, until the hogshead is two-thirds full; when the press should be applied till the tobacco is pressed down to within 1½ foot of the bottom of the hogshead. The press should remain on an hour or

more, in order that the tobacco may settle together; then the press should be raised, and the packing resumed as before, till the tobacco is within 1½ foot of the top; then the press should again be applied till the tobacco is pressed half-way down the hogshead; the same proportion should be observed until the hogshead is full. Then put the head in, and it is ready for market."

Perry Hull would have packing-cases "made of cheap pine lumber, 3 feet 8 inches long by 2 feet 6 inches wide and high, outside measurement; they should be made tight and strong; there should be corner-pieces nailed in 1½ inch square, nailing to them well from both ways. The tobacco is packed in, with the butts towards each end; taking hold of the butt with one hand, the tip with the other, and giving the hank a slight twist, lay it in the case in that position. A lever or screw can be used to do the pressing, whichever is the most convenient. From 360 lb. to 380 is the proper weight for packing; though if the tobacco is very dry, 400 lb. will probably not sweat too hard; and if quite wet (which it never should be), 350 may.

"After being packed, the tobacco should never be kept in a damp cellar; a good tight barn or other outbuilding, where the cases can stand on a floor, is the best place. The crop usually passes from the hands of growers, into those of speculators and dealers, before the sweating season. The first symptoms of sweating appear about as soon as settled warm weather comes, usually the fore part of May; it then commences to grow warm, and 'wet' to appearance, which increases for about 3 weeks, when it reaches its culminating point and commences to cool off.

One unaccustomed to the crop, upon examining it at this period, would be sure to think it was rotting, but if not too damp when packed, there is no danger. Sometimes, if a case is known to be too wet, the lids can be started, to give a little vent to the steam and gases which are generated, and this is about all that can be done for it; and it is far safer to see that the proper condition is secured before packing, than to do even this. The weight will commence to decrease about as soon as the heat commences, and it has been ascertained by weighing at the various stages, that more than half of the shrinkage is accomplished by the time that the sweat has reached its culminating point. About 10 per cent. is allowed for the shrinkage of a crop, in just the right state when packed; if wetter, it will shrink as high as 12–13 per cent., and if very dry, it may shrink less than 10 per cent. The different grades usually bring about the following prices: Wrappers, 14 cents per lb.; Seconds, 7–8 cents; Fillers, 3–4 cents. The proportion of the different grades in a good crop should be, Wrappers, three-fifths, and Seconds and Fillers, each one-fifth."

Judson Popenoe thinks boxes "should be made 30 inches square by 42 inches in length outside; saw the end-boards 28 inches long, nail them to two 1¼-inch square slats so that the head will be 28 inches square; when two heads are made, nail the sides of the box to the heads so as to come even with the outside of the head, the sides being 28 inches wide; then nail the bottom on firmly; the top can be nailed slightly until after the tobacco is packed, when it can be nailed firm. Set your box by the side of the bulk, and let one hand get in the box and

another pass the tobacco to him, one hand at a time, taking care not to shake it out, but put in the box as it comes from bulk, with the butt of the hand next the end of the box. Place close and press with the knee firmly; lay alternate courses at each end, and if the tobacco is not long enough to lap sufficiently to fill the centre, put a few hands crosswise in the centre. When the box is full, place it under a lever; have a follower, which is a cover made of inch boards, nailed to two pieces of scantling and made to fit inside of the box; lay this on the tobacco, and build with blocks of scantling on it of a sufficient height for the lever to be clear of the box when pressed. Press down firmly with a strong lever, and, while kneeing in another box full, let the lever remain, so that the tobacco gets set in the box. When ready, take the lever off and fill up as before, about 6 inches higher than the box; press it below the top of the box, take off your lever and nail on the top as quickly as possible. Some use tobacco-presses for packing, which are perhaps more convenient; they are of various patterns, but a lever saves the expense of a press and is in the reach of all. If tobacco is sold at the shed, it should be sold before packing, being easier examined in bulk than box."

Mitjen is of opinion that, "except in cases where the extraordinary size of the leaves will not permit it, all the bales should be made up of 80 '*manojos*'; but in the former case 60 of the first classes of the first quality will be sufficient. The fixed number of 80 *manojos* is convenient for making calculations. We have already said that the day following that on which the *manojos* were tied up, they should be packed in bales, so as not to allow

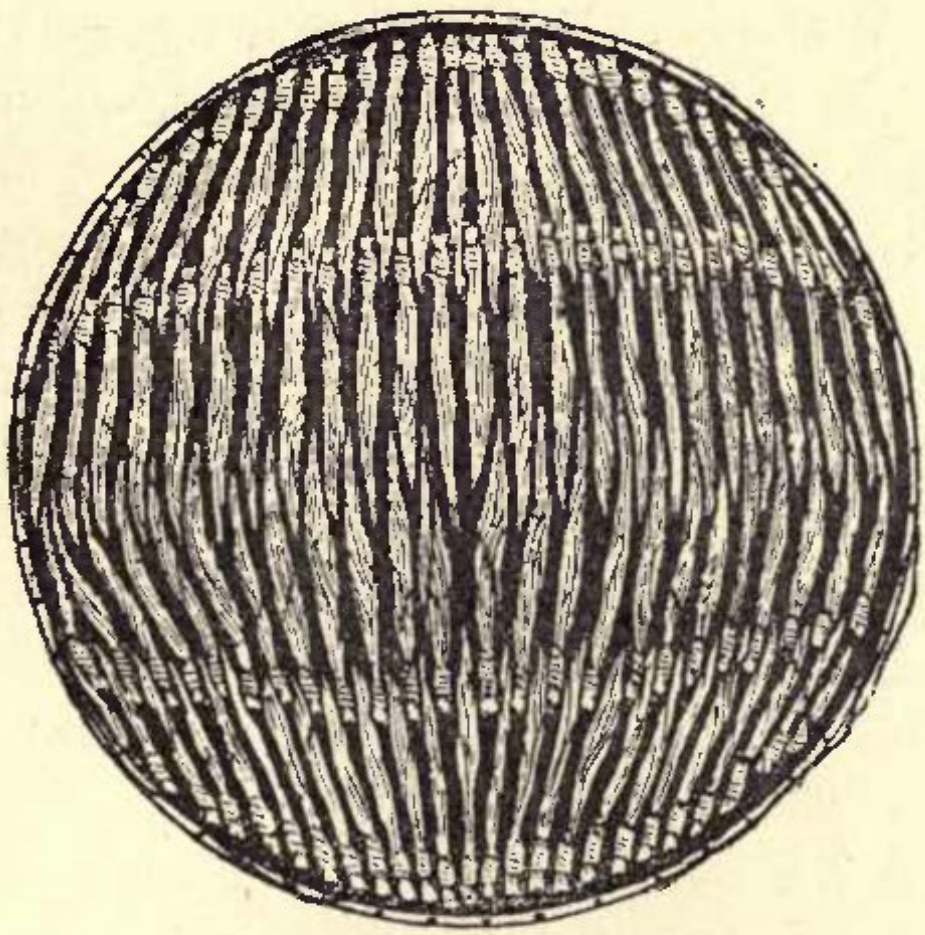
them time to dry too much. Bearing this in mind, the dyeing and tying up of the *manojos* should not be commenced until there is a sufficient quantity of assorted leaves to make a bale or bales; should there be a surplus of *manojos* after the bales are made up, they should be kept protected from the air, until another set of bales is about to be made up.

"We do not think it is necessary to further explain the manner of placing the *yaguas*, in order to make the bales, but it is expedient to state that 3 layers of *manojos* should not be put in one bale, because it makes a bad shape, and the tierces or bales appear much smaller than they really are. The bales should be made of 2 layers, having the heads of the *manojos* placed towards the outside. When the first layer of one of the heads of the bale is placed, the heads of the other layer should be so arranged that they will be about half-way over the points of the others; and if the tobacco is very small, to each row of *manojos* may be laid crossways, two *manojos* with their heads touching the *yaguas*, so that the tobacco placed in the bale may form a compact even mass, impervious to the air. The same should be done in the other rows, care being taken that the bale is made somewhat thicker in the middle, and never have a hollow there,—a sure sign of loose packing,—and into which the air finds its way, preventing fermentation, proper curing, as well as aroma—the tobacco becoming dry too soon. After the bales are tied up, they should be placed in the sun or wind until the humidity of the *yagua* is dry. They should then be placed on boards in the storehouse, putting them two and two, one on the other; and after eight days they should be moved, placing

them below those which had been above, so that they may ferment and be equally pressed."

For pressing tobacco into the hogshead, Hudson suggests that "a hole be mortised in a tree, in which the end of the lever can be inserted, passing over the hogshead, and working by a tree or post, in which should be pins at intervals of 8–10 inches, by which a small lever may be

FIG. 13.



used to force the first lever down on the tobacco ; 50–100 lb. may be placed in the hogshead and firmly pressed a few hours, and as much added again, and so on. Fig. 13 will serve to represent the manner in which the hands (or ties) may be placed in the hogshead—filling the middle first, then the outer edges—placing the tops toward the centre, and observing to keep the centre and edges full."

Improving.—It is sometimes the custom to subject the

tobacco-leaves to some sort of improvement. There is no doubt that, by proper application of ingredients, the value of tobacco may be much enhanced. The most costly tobacco often commands a high price, not so much on account of its inherent flavour, as from that given to it artificially. In most instances, the best course to be adopted is to leave the improvement of the leaves to the manufacturer. Many ingredients are employed to improve smoking-tobacco. They tend:—1, to make the tobacco more elastic and flexible; 2, to remove the coarse flavour; 3, to add a particular flavour; 4, to improve the burning quality; 5, to improve the colour. To make the tobacco more flexible and pliant, the leaves are macerated in, or sprinkled with, a solution of sugar. In hot countries, this process is often necessary, to give tobacco such an elasticity as to fit it for handling, especially when intended for wrappers. To remove the coarse flavour, it is often macerated in water, or in very dilute hydrochloric acid. In Holland, 4–8 oz. of hydrochloric acid, diluted with 25–30 measures of water, is applied to 100 lb. of tobacco. The coarser the flavour of the tobacco, the stronger is the solution used. The time of maceration varies between ½ and 1 hour. Sometimes tobacco is steeped in a mixture of sugar solution and diluted hydrochloric acid. To extract the fatty matter, it is macerated in alcohol or spirit of wine. To give a fine flavour, numerous substances are employed, some of which are kept secret. The following ingredients are mostly in use:—Water, cognac, vanilla, sugar, rose-wood, cassia, clove, benzoin, citron oil, rose-wood oil, amber, thyme, lavender, raisins, sassafras-wood, saltpetre, orange, and

many others. The burning quality is improved by macerating in or sprinkling with solutions of carbonate of potash, acetate of potash, acetate of lime, or saltpetre, &c. Badly-burning cigars inserted for a moment in such solutions are much improved. Tobacco treated with acetate of lime yields a very white ash. The colour is sometimes improved by fumigating the leaves with sulphur, and by the application of ochre and saffron.

Although it may be said that fine tobaccos generally do not require any impregnation with foreign matter for the sake of flavour, yet the manufacturer frequently endeavours to give the leaf a particular aroma. An inferior tobacco, however, which often would not find a market, is sometimes so much improved by artificial means, as to compete successfully with the genuine fine article. It is said that in Germany indigenous tobacco is often so much "improved" that the cigars made from it, after being covered with a fine tobacco leaf, are sold as genuine Havanas. A special preparation of tobacco for snuff is seldom attempted by the cultivator. With reference to the preparation of tobacco for export, the sorting of the leaf is of the utmost importance; only first and second sorts should be exported. It would be well to remove the midribs, whereby the cost of transport and customs duty would be greatly reduced.

The value of a cigar depends, not only on the intrinsic value of the leaf, but to a great extent on the mode of manufacture. Thus, the raw material may be of good quality, but if the maker does not classify the leaves properly, or if he rolls his cigars too hard, which must vary according to the qualities of the leaves, the cigar

will burn badly. The best-burning leaves must always be used for wrappers. If this should be neglected, the inside of the cigar burns faster than the covering, the air has no access to the burning parts, and the empyreumatical substances are volatilized without being decomposed. Such cigars therefore make much smoke, and smell badly.