

results, and unless the tobacco is grown properly in the field it cannot be cured satisfactorily. Then at harvesting time he carefully selects plants of the same colour, body, and degree of ripeness to fill his kiln. Plants which differ, to any great extent, in these characteristics will not yellow up together and as a result the temperature must be run either too slow or too fast, for a portion of the tobacco, and a uniform colour cannot be obtained. It is also essential that the kiln be filled with tobacco, all of which has been cut the same day.

General principle.—The fundamental principle underlying the successful curing of flue-cured tobacco is the proper regulation of the humidity of the air in the barn. In the humidity we find an expression of the water-holding capacity of the air, and therefore its drying capacity. The humidity is regulated by the temperature of the barn, hence the use of artificial heat, and by the ventilation. By raising the temperature the water-holding capacity of the air is increased, consequently its capacity for drying is increased; and as, in time, the air in the barn will become nearly saturated with moisture, its capacity for holding water or drying becoming greatly reduced, it is necessary to replace the saturated air with air of greater water-holding capacity, by ventilation. Hence, in the first stages of the curing process, when the curing or drying must proceed slowly, a high relative humidity or nearly saturated atmosphere, a low temperature, and very little, if any, ventilation is desired. But as the curing advances the relative humidity of the air in the barn must be lowered, by increasing the temperature and ventilation, in order to increase its drying capacity. Experiments indicate that, with light-bodied tobacco, the relative humidity of the barn should be approximately as follows:—

About	80%	to 85%	when starting to cure.
"	70%	when	the bottom leaves begin to yellow.
"	68%	"	the middle leaves begin to yellow.
"	65%	"	the tip leaves begin to yellow.
"	42%	"	the leaves have all become about yellow enough to fix the colour.

With heavier bodied, very sappy tobacco, the relative humidity should be lowered faster after the leaves begin to yellow than with lighter bodied tobacco, or there will be danger of the leaf having too much moisture to take a drying heat without scalding when the yellowing process has been completed. The preceding figures are only approximate and are the results of only two years' experiments; hence they should not be taken too literally.

The relative humidity of the barn is determined by computation after finding the difference in the temperature of the barn as recorded by a hygrometer, or two thermometers, the bulb of one of which is covered with a piece of muslin cloth which is suspended in rainwater.

In controlling the rate of drying, the temperature in the barn bears a close relation to that of the outside air, and the correct difference between the temperature inside and outside of the barn is influenced by the humidity of the air outside. Therefore, in warm weather or in wet seasons the temperature in the barn must be higher than in cool or dry weather.

No fixed rule or set formula can be followed successfully in flue-curing tobacco. Different types of tobacco and different climatic conditions necessitate so many changes in the temperature and humidity of the barn that it is seldom that two barns are cured under exactly the same conditions and with the same changes in temperature. However, the same general principles hold good in all cases.

Yellowing.—The first stage in the curing process is called yellowing the tobacco. During the yellowing process the colour of the leaf changes from green to yellow and certain chemical changes also take place. These changes are life processes, occurring while the leaf cells are still alive but slowly dying from starvation and if the cells are killed by drying too rapidly or by being bruised before they occur, the tobacco cures