Much data has been collected which goes to show that, apart from the various influences mentioned above, heredity plays a fundamental part in the production of nicotine in the individual. Strains have been obtained which are characterized by high and low nicotine content, respectively, and it now remains to determine whether these characteristics can be fixed under practical conditions and yield high grade products.

TOBACCO SEED SEPARATION, SELECTION AND PROPAGATION.

BY D. P. COOLEY, *Granby, Conn.*

The tobacco industry of Connecticut is one of the most profitable as well as the most unprofitable industries of the state. In 1896 we commenced selecting seed plants to produce a better shaped leaf as well as more leaves to the plant, with varied success. One year we would think we had made great progress while the next year would meet with complete failure. In 1903 we commenced saving seed under a paper bag. The next season we could see some gain, but there were still a good many small and undesirable plants which materially reduced the weight of the crop as well as showed up badly at the time of sale. On examining the seed closely a great many small seeds which were light in weight and low in vitality and very slow in germinating were found. Some seed would not germinate until the following spring, so it was possible to set plants from seed sown the year previous.

In the winter of 1904 I made a machine for separating the seed. This apparatus takes out all the light and undesirable seed and retains the heavy ones. This separation is done by placing the seed in a funnel shaped hopper at the top of the machine where they are fed into a tube which takes them down into a glass tube where they pass on to a spreader and into an air blast. There the light seed is blown out over the top of the tube, while the heavy seed is caught in a receiving funnel below and pass out of the machine through a tube at the bottom. In the spring of 1904 in sprouting my seed for sowing (which had been separated) I was greatly surprised to find it all sprouting at the same time, whereas I had been accustomed to having it sprout a few seeds at a time extending over several days, while with separated seed it all sprouted within twenty-four hours of the time the first seed sprouted and in from two or three days the bed was all green with plants. From 1904 up to the present time I have had no trouble with small undesirable plants and but little difficulty with what are called calico plants. The weight

is increased three to five hundred pounds per acre where separated heavy seed has been used. I consider the separating of seed one of the most important factors in the success of a perfect tobacco crop.

SELECTING SEED PLANTS AND SOWING SEED BEDS.

A great many save the first plants that head out or blossom, but this practice is wrong, as often they are freak plants with narrow leaves and set wide apart on the stalk. A perfect seed plant of the Havana seed tobacco should have at least eighteen leaves with the eighth leaf from the ground at least three-fifths as wide as its length or a leaf 25 inches long should be 15 inches wide at the shoulder or widest part with the leaves set close together on the stalk. When the plant is well headed out before the blossoms open (or if any have opened pick them off) pick off the small leaves and suckers so there is nothing left but the crown of the plant. Now take a twelve pound paper bag and place it over the head of the plant and tie around the stalk closing the bag to all insects or flying pollen from other plants. Care should be taken that the twine which holds the bag does not become too tight and as the plant grows the bag should be lifted up so that when the crop is harvested the leaves should all be picked from these plants and strung with twine on laths and numbered to correspond with the number on the plants from which the leaves were harvested so that they may be examined when cured. As soon as the nights get cold, or about September 15th, cut the seed plants and string them on lath in the same way you harvested the rest of the crop and hang in shed where they may be left until spring. If at any time a bag becomes torn replace it with a new one. After curing the leaves which were picked, examine them closely and note the color, texture and grain of the leaf and measure them. When you find those which suit you take the number to the shed and find the corresponding number of seed stalk, shell the seed and have it separated if possible, when it is ready to sow. In preparing the seed beds select a southerly or southeastern exposure. If the soil is not suitable dig it out about twelve inches and replace with light sandy loam and horse manure alternate layers about four inches thick, with loam on top. There should be a frame around the bed using plank six inches wide for the lower side and twelve inches wide for the upper side so the water will run off and not stand on the glass covering or drip through onto the bed. The whole frame should be covered with glass, sash or cloth. Some growers use alternate frames, one of glass the next of cloth, but the glass is preferable. Rake the beds smooth, removing all the stone and

hard pieces of earth. Cut a board which will just lay inside the frame on the seed bed soil. Step on the board and press it down firmly and walk across the bed, turn the board over and walk back and continue this process until the whole bed has been covered or "planked." Sow the seed using one tablespoonful of separated seed to every section of bed twenty feet long by eight feet wide. If it has not been separated use two tablespoonfuls of seed for every twenty-five foot section and rake very lightly with a garden rake. Care should be taken not to draw any earth with the rake. Lay on the board as before and go through the same process until the whole bed is pressed down. Now give it a thorough watering no matter how cold it is or if it should rain at the time, water and cover at once. In sowing the seed some mix it with corn meal, some with land plaster, but I prefer road dust. Corn meal is apt to mold or rot the plants. Land plaster will do if dry seed is planted, but will kill sprouted seed.

In 1903 I began growing experimental tobacco for the U. S. Department of Agriculture under the direction of Prof. A. D. Shamel. We made several crosses from which was selected what is known as the Cooley hybrid. The parent plants were Connecticut Havana seed as the female and Connecticut grown Sumatra as the male. In this cross a great many types of tobacco developed from the shoe string to the broad leaf type, but by careful selection we have a new tobacco which has great promise. As to the shape of leaf and uniformity of plant it is well settled but should be grown a year or two more and selections made for quality before putting it on the market. It is reported by some who have grown it the past season that the yield was over three thousand pounds per acre. In growth it is a strong vigorous grower with very wide and round shaped leaf. The color is a light to medium cinnamon brown and has a perfect burn.

VALUE OF THE USE OF IMPROVED VARIETIES OF SUMATRA TOBACCO IN FLORIDA.

BY H. F. BOSTICK, *Quincy, Fla.*

In 1899 the extensive growing of tobacco under shade was begun near Quincy, in Gadsden County, Florida. The previous year a small experimental patch had been planted under slats and the thinness of the leaves and their texture led growers to believe that a tobacco suitable for cigar wrapper purposes could be grown on old cultivated lands, by building shades over them. Their previous experience had been that such