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HOME-GROWN TEA.

BY

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LETTER OF TRANSMITTAL.

U. S. Department of Agriculture,
Bureau of Plant Industry,
Office of the Chief,
Washington, D. C., May 20, 1907.

Sir: I have the honor to transmit herewith an article entitled "Home-Grown Tea," prepared by Mr. George F. Mitchell, Scientific Assistant, and recommend its publication as a Farmers' Bulletin.

This paper was submitted by Dr. R. H. True, Physiologist in Charge of Tea Culture Investigations, at whose suggestion it was prepared in order to meet a considerable demand for information on the methods of growing tea in small home gardens and utilizing it for drinking purposes.

Respectfully,

B. T. Galloway,
Chief of Bureau.

Hon. James Wilson,
Secretary of Agriculture.

CONTENTS.

	Page.
History of tea cultivation in the United States	7
Climate required by the tea plant	8
Selection of soil	8
Planting	9
Cultivation	11
Pruning	11
Plucking	12
Curing	12
Black tea	13
Sun-cured black tea	14
Green tea	14
How to prepare tea for drinking	15
Conclusions	15

ILLUSTRATIONS.

	Page.
FIG. 1. Frame erected over seed bed	9
2. Tea plants serving ornamental purposes in hedge rows bordering a walk	10
3. Tea plant, showing part to be plucked	12
4. Rolling the withered tea leaves	13

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HOME-GROWN TEA.

HISTORY OF TEA CULTIVATION IN THE UNITED STATES.

A little more than one hundred years ago the French botanist Michaux successfully planted the first tea in the United States. This was at Middleton Barony, on the Ashley River, about 15 miles from Charleston, S. C.

In 1848, Dr. Junius Smith retired from an active life in London to ruralize and plant tea on his estate near Greenville, S. C. Both plants and seed were imported, and in an article in the American Agriculturist for 1851 Dr. Smith stated that his plants were doing finely and had withstood a snow 8 to 9 inches deep on January 3 of that year, and he added: "I can not help thinking that we have now demonstrated the adaptation of the tea plant to the soil and climate of this country, and succeeded in the permanent establishment within our own borders." Dr. Smith died soon afterwards, in 1852, and his plants, without protection, soon disappeared.

As early as 1858, the United States Government, through the Commissioner of Patents, sent Mr. Robert Fortune to China to obtain seeds to be planted in this country. In less than one year's time tea plants were distributed among private persons in the Southern and Gulf States, who later reported that the plants had been successfully cultivated by them and in a great many cases that tea had been made at their homes.

During the year 1880, Hon. William G. Le Duc, then Commissioner of Agriculture, employed Mr. John Jackson, who had been a tea planter for fourteen years in India, to carry on experiments to test the feasibility of growing and manufacturing tea in this country. The experiments were at first conducted in Liberty County, Ga., on a place bought by the Government from Dr. Jones, who had planted tea there in 1850.

Later, 200 additional acres of land near Summerville, S. C., were leased for twenty years from Mr. Henry A. Middleton to carry on these experiments. Seed was imported from Japan, India, and China and was also collected from the few plants then surviving in the United States that had been previously sent out by the Patent Office. From these

seeds a small area was planted in tea, but before the plants had a chance to make very much growth Commissioner Le Duc was succeeded by Commissioner George B. Loring, who thought it best, because of the illness of Mr. Jackson and for other reasons, to abandon these experiments.

Since then the cultivation and manufacture of tea on a commercial scale has been practically demonstrated, in cooperation with the Bureau of Plant Industry, by Dr. Charles U. Shepard at his "Pinehurst" tea gardens near Summerville, S. C., where about 100 acres are planted to tea, of which the area in bearing yields about 12,000 pounds of dry tea each year. One of the gardens has yielded as much as 535 pounds of dried tea to the acre during a single season.

Although the distribution of the many plants and the establishment of the many home tea gardens in the South were steps toward encouraging the people to manufacture their own tea, these gardens soon died through lack of interest, because the important point of teaching the growers how to pluck and make the leaves into tea had been neglected.

Experiments were conducted during the summer of 1905 with a view to developing a simple process by which both the green and the black teas can be made successfully by any intelligent person with only such utensils as are found in every kitchen. These experiments indicate very strongly that the result sought can be accomplished and that farmers and others who have enough garden space to grow the plants for use or for ornamental purposes can with very slight expense and trouble make enough tea for their home consumption. It is a significant fact that much of the tea grown in China is planted in the corners and waste places of farms.

CLIMATE REQUIRED BY THE TEA PLANT.

The climate of the Southern and Gulf States is in general admirably adapted to the cultivation of the tea plant. Although the rainfall is much less than in a great many tea-producing countries, the average annual temperature is lower, causing less evaporation and consequently requiring less rainfall. The cultivation of the tea plant can safely be risked where the temperature seldom falls below 24° F. and never goes below zero, and where the annual rainfall exceeds 50 inches, 30 inches or more of this precipitation occurring during the cropping season.

SELECTION OF SOIL.

A well-drained, friable, and easily penetrable clay loam or sandy loam containing a large amount of organic matter is best adapted to the cultivation of the tea plant. Very tenacious undrained soils

or very sandy soils that lack water-retaining properties are not adapted to the growth of tea; neither will the plants tolerate stagnant water in the subsoil. The plants being of subtropical origin need as much protection from the cold as possible; therefore, much better results can be obtained where a southern exposure with an abundance of sunshine is selected.

PLANTING.[a]

The seed should be planted in the autumn or winter just before a rain. A convenient place protected from the prevailing winds by a

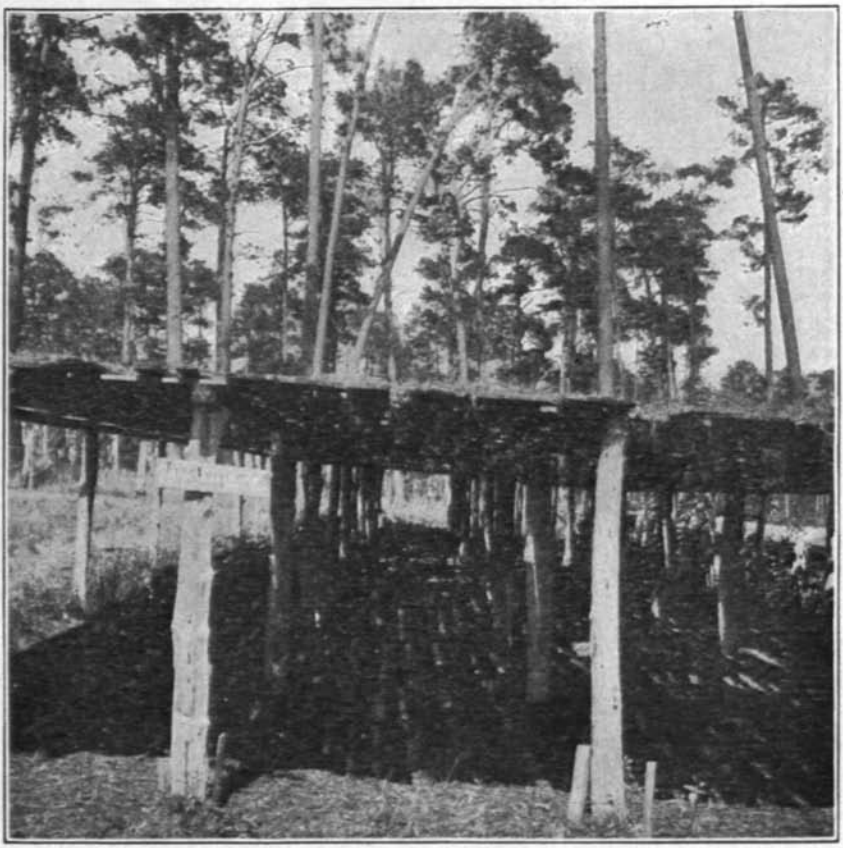

FIG. 1.—Frame erected over seed bed.

fence, a wind-break, or by the side of a house should be selected and covered with a frame about 6 feet above the ground. (Fig. 1.)

[a] For information concerning the vegetative propagation, veneer grafting, and herbaceous grafting of tea, see Bulletin No. 46 of the Bureau of Plant Industry, entitled "The Propagation of Tropical Fruit Trees and Other Plants," 1903, pp. 19–23, and Pls. VI and VII.

This frame should have cracks about 1½ to 2 inches wide, so as to admit only a little of the direct rays of the sun. It can be made from any waste lumber or loosely woven wire netting covered thinly with straw of some kind.

The soil should be pulverized to a depth of at least 8 inches and entirely freed from grass and roots. The seed should be placed 4 by 4 inches apart in little holes about 1½ inches deep. One seed should be put in each hole and covered by simply raking the surface over gently with a rake.

FIG. 2.—Tea plants serving ornamental purposes in hedge rows bordering a walk.

The nursery bed should be covered uniformly with some kind of straw to protect the seed from the cold and also to mulch the bed. Pine straw or needles, if procurable, will be found excellent for this purpose. As the plants begin to shoot above the ground, a little of the straw should be removed from time to time and the nursery thoroughly weeded. This should be kept up until autumn, when the straw should be permanently removed and the top of the frame dispensed with.

When only a few hundred plants are to be raised from seed, a large box 12 inches deep provided with drainage holes and kept protected

from the direct sunlight will suffice. In very dry weather, water should be applied to the nursery bed or box either early in the morning or late in the afternoon, when the sun is not very hot.

Seedlings are generally transplanted in the autumn or spring after a heavy rain or when the soil is quite moist to a considerable depth. The plants may be set out twelve to eighteen months from the time of sowing the seeds, although it does no harm to let them remain in the nursery two years, but in such cases their tops should be slightly pruned to prevent them from growing too tall and slender. The plants can either be set 2 feet apart in hedge rows along fences or walks, where they can serve for ornamental purposes (fig. 2), or they can be placed from 2 to 5 feet apart in 5-foot rows.

The soil should be thoroughly pulverized by spading or plowing as deep as possible; then it should be leveled and holes 9 to 12 inches deep made at the proper distances with a trowel or spade. The plants should be placed in the holes with the taproot straight down. In cases where this can not be accomplished owing to extreme length the root should be pruned with a knife or other sharp instrument. The earth should be firmly compressed around the plant, which is best done with the foot. If the soil is rather dry and it seems desirable to water the plants, this should be done.

CULTIVATION.

Frequent and shallow cultivation that will maintain a loose mulch around the plants, as well as keep them free from weeds, is best during the spring and summer, when evaporation is very pronounced, because this shallow mulching breaks the capillary tubes in the soil and lessens the evaporation. In the autumn, after the plucking season is over, the soil should be turned up thoroughly to a considerable depth with a spade or a plow, so that oxidation and disintegration will take place during the winter, when there is very little evaporation.

Commercial fertilizers or barnyard manure should be applied late in the winter or early in the spring and well worked in around the plant but not too near the stalk, because the minute feeding roots which take up the plant food extend some distance from the stem.

PRUNING.

Every February or March after the plants are three years from seed they should be pruned down so that only two eyes are left on the preceding year's new wood. This can be done with either knives or pruning shears, making a clean slanting cut one-half inch above the top eye that is to remain.

Sometimes the plants get very thick after five or six years of service and fall off in their yield; in such cases they should be "collar pruned," that is, pruned to the ground by sawing off the stems. This causes them to put out an abundance of new shoots, which can be picked late in the same season.

In all cases the prunings should be buried in the middle of the rows, as they have considerable manurial value.

PLUCKING.

In plucking, which in the Southern States should begin about the first of May and continue until about the middle of October, only the bud (pekoe tip) and the first two or three leaves should be taken (fig. 3), as the other leaves are generally too tough to make good tea. This is done by pinching off the stem with the thumb nail and first finger just under the last leaf to be plucked. The bushes are generally plucked every seven to fifteen days, but this is determined by the development of the tender shoots, care being taken that they do not become too tough before plucking, because then they do not make good tea.

FIG. 3.—Tea plant, showing part to be plucked.

Leaves that are slow in developing always make a better flavored product than those that grow rapidly, so a small yield is always compensated for by a more highly flavored tea.

CURING.

In the processes described, the use of a thermometer and other technical apparatus has been entirely eliminated and their places supplied by the senses of touch, smell, and sight. The importance of keeping the stove and kitchen utensils that are to be used absolutely clean and void of odor of every description can not be too strongly stated, because dry tea readily absorbs any odor that may be present. As only a few utensils are required it is best to obtain new ones and keep them for this purpose only. All that is necessary is a 4-quart double boiler (a saucepan with a hot-water jacket), a large pan, preferably agate-lined, a large wooden spoon or paddle, and a kneading board where the use of a clean kitchen table can not be had.

BLACK TEA.

The leaves are brought in the day before they are to be made into tea and are spread very thinly and evenly on a clean table or floor, where they are allowed to remain from twelve to twenty-four hours, when they will lose about one-half their weight by the evaporation of moisture, become very soft and flaccid, and feel like an old kid glove. In this condition they are ready for rolling. When wither-

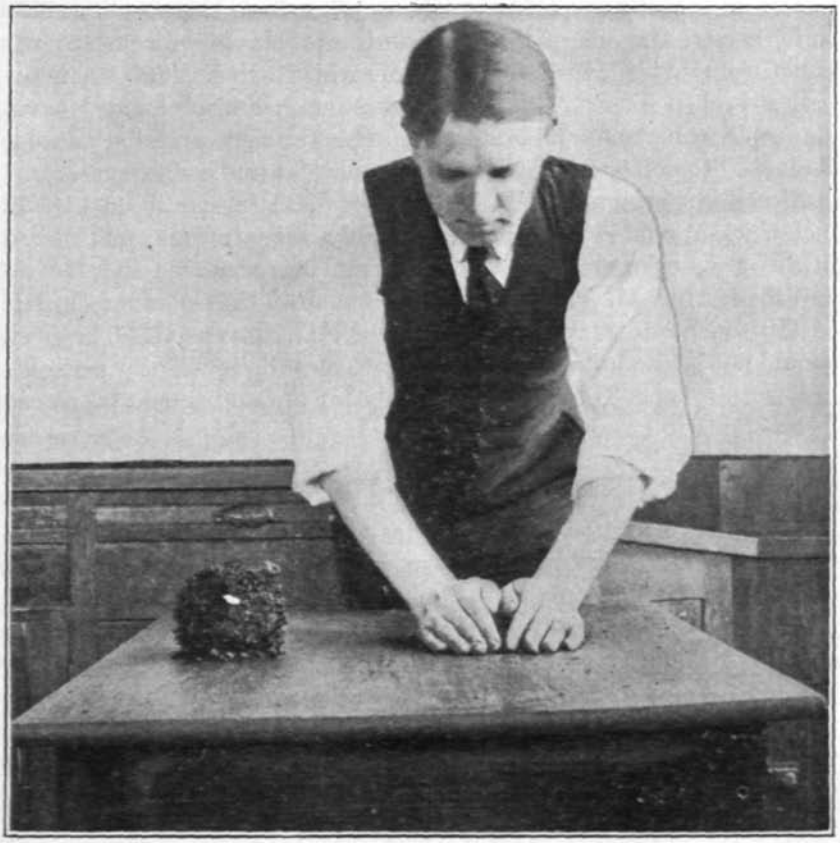

FIG. 4.—Rolling the withered tea leaves.

ing is near completion the leaves should be watched very carefully, because if allowed to go on too far they become parched and unfit for rolling.

About half a pound of the withered leaf is rolled or kneaded from twenty-five to thirty minutes on a clean table or kneading board. The operation is similar to the kneading of dough. (Fig. 4.) The rolling should be very light for the first ten minutes so as to allow the leaves to begin to twist or take on the "roll"; then the pressure

should be gradually increased until all that can be exerted is applied, so as to express the juice (which should be sopped up with the leaves) and give the leaves a tight twist. This tight rolling not only makes a strong tea but helps to preserve the flavor. Very often the leaves will be a little overwithered and rather brittle, in which case water should be sprinkled on the withered leaves until they are rendered soft enough to roll.

After rolling, the leaves are formed into a "ball" and allowed to remain in a cool and preferably damp place from three to six hours to ferment. The end of this stage in the process is indicated by the ball turning a yellowish copper color, which can be seen when the ball is broken open. The raw herby scent has also changed to an agreeable fruity one. This stage must be watched carefully, because if allowed to go too far the leaves become sour and unfit for tea.

After fermenting, the ball is broken up and spread about half an inch thick in a large clean pan (preferably of agate ware) and placed in the stove oven to dry. The pan should be removed at intervals and the tea turned. This should continue until the tea is very brittle to the touch and a very slight odor of tea is given off. The oven should not be too hot during this operation as too much heat prevents uniform drying. The tea is now ready for use and should be placed in air-tight tin boxes or cans.

SUN-CURED BLACK TEA.

Sun-cured black tea is the same as the ordinary black tea except that the withering is done in the sun in a much shorter time and produces a tea more acceptable to the average taste.

The freshly picked leaves should be spread very thinly and evenly on trays made by tacking cloth on wooden frames of any convenient size, or they may simply be spread on cloths, which in either case should be placed in the sun until the leaves become very flaccid. This will require from one and one-half to three hours, or more, depending on the intensity of the sun's heat and the humidity of the atmosphere. During this operation the leaves should be turned at intervals, so as to induce uniform withering. The further procedure is identical with that already described for the black tea from the point of withering.

This tea is generally made during the months of July and August, when the heat of the sun is very intense.

GREEN TEA.

The green tea is made from the same leaves as the black, although some varieties are best adapted to make each of these respective kinds. The green-tea process is the same as that for making black

tea, except that instead of withering from twelve to twenty-four hours and fermenting from three to six hours (when oxidation takes place, which renders it black) the green leaves are quickly brought in and placed in a covered double boiler—that is, a saucepan with a hot-water jacket (one pound of leaf to a 4-quart boiler)—and allowed to remain surrounded by boiling water from seven to nine minutes; the cover should be removed and the leaves stirred at intervals. This will render the leaves very soft and flaccid, ready for rolling. During this rapid process the oxidizing agencies of the leaf are sterilized by the boiling water and steam in the hot-water jacket surrounding the leaves, and the production of a green tea is rendered possible. These flaccid leaves are rolled in like manner to the black tea for about ten minutes, being stirred at intervals until they lose some of their moisture and become sticky; then they are again rolled from fifteen to twenty minutes under all the pressure that can be applied. After rolling they are immediately placed in the oven in a pan and turned at intervals (similar to the black tea) until they are dry and brittle to the touch and a slight scent of tea is given off.

HOW TO PREPARE TEA FOR DRINKING

Attention must be called to the fact that ordinarily tea is not drawn properly, which not only makes it less palatable than would otherwise be the case but also makes it very deleterious. Chemically, tea leaves yield principally thein and tannin. The former is the mild stimulant that is sought, while the latter should, as far as possible, be avoided. The thein is very soluble and nearly all dissolves in water that has been brought to the boiling point and allowed to remain on the leaves three or four minutes, whereas if the infusion be longer extended only a little more thein is extracted but much more tannin.

To make tea properly, bring freshly drawn water to a boil, pour it on the requisite amount of tea in a previously scalded pot, and allow it to remain covered from three to five minutes; then decant or strain into another receptacle. The spent leaves should not be used again because practically all the stimulating ingredient has been removed and that which is left is very deleterious to health.

CONCLUSIONS.

The cultivation of the tea plant in home gardens is not only profitable, but a great deal of pleasure can be derived from it at the same time that the use of the much adulterated foreign article is avoided. This is often found to contain Prussian blue, indigo, turmeric, soapstone, and leaves of other plants than tea, some of which are injurious to health.

In the autumn this beautiful evergreen plant is covered with handsome, fragrant, whitish flowers, having a golden yellow center, making it an excellent ornamental plant.

The children as well as the older members of the family may derive abundant pleasure in plucking and making the leaves into tea, although the process is so simple that this work can easily devolve upon any intelligent servant.

The crop of an average tea bush is about 3 ounces of cured tea during the picking season, so that 100 plants will yield about 18 pounds a year. As a pound makes from 350 to 400 cups of tea, 50 plants should furnish a cup of tea apiece to a family of nine for every day in the year.

301

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