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## GOVERNMENT EXPERIMENTAL AND PROPAGATING GARDEN.

Prominent among the purposes of the government, with respect to agriculture, is the introduction of trees, shrubs, and plants from other countries. In whatever form these are received, whether as seeds, roots, cuttings, or plants, the most tender treatment is generally requisite to preserve, develop, multiply, and acclimatize them; and every possible facility therefor should always be in readiness at the moment of their arrival.

The want of accommodations of this character had long been felt, when, in August, 1858, intelligence of the transmission of a quantity of tea seeds, from China, created an immediate necessity for their provision. A plot of five acres was accordingly chosen, in a central position, in the city of Washington, and prepared in the manner described in the Report of the Commissioner of Patents on Agriculture, for that year. A system of underground tile-drainage, upon a plan now common in the United States and in Europe, was applied to this ground, and with excellent results for a time; but, unfortunately, there was a want of adaptation in the manner of laying the tiles upon the yielding, marshy base, and the continuity has consequently been interrupted by occasional depressions. When this shall have been remedied, as it doubtless may be without serious detriment to the field or its products, the experiment may be regarded as complete and satisfactory.

The plan pursued in constructing and warming the green-houses upon this ground, though successful in its present application, is not commended for all purposes. Decomposing vegetable matter, covered with a portion of nitrogenous materials, might be adapted to general use, were the process of decomposition susceptible of being controlled at will: but so variable is its progress, and so dependent upon external influences, in a ratio inverse to the requirements within, that the vicissitudes of temperature proceeding from it are such as none but hardy plants can endure. The volatile emanations are likewise in excess in this process, insomuch that even those plants which become accustomed to and prove capable of sustaining an atmosphere so highly stimulating may suffer when suddenly withdrawn from its influence and exposed to the open air.

The partial exclusion of the light and warmth of the sun, practised in connection with this plan, also proves detrimental to tender plants, while the altitude of the roof, eleven feet at the apex, is to them a constant and certain cause of slender and feeble growth.

Happily, these disadvantages are remediable at small cost of money and labor, by the provision of apparatus for artificial heating, the elevation of the beds, the adoption of means of ventilation, and the extension of the glass roofing over the whole of each structure.

The garden thus established may be properly applied to other uses than the propagation of exotic plants. Not only may the tea shrub, the cinchona tree, the camphor tree, the cork tree, and others of foreign origin, be nurtured here, but also many native as well as foreign plants desirable for their edible and medicinal properties and products and ornamental qualities. The amateur, pharmaceutical, and professional botanist may here examine the vegetation of many soils and climates, and witness experiments in the culture and hybridization of various trees and plants. Among those now in course of cultivation the following may be named:

*Tea shrub from China, 32,000 plants:* The proposition to introduce the tea shrub of China to culture in the United States has been discussed in the Reports of the Commissioner of Patents, for the years 1855 and 1857; and information, gleaned from accredited sources, has been given in regard to this plant, and the soils, climates, and conditions of its profitable growth and preparation. The subject is now presented in a practical form; a new interest has been excited in regard to it; and information, upon which the American planter may rely, is demanded by the exigency that has arisen.

Tea was little known in Europe until the middle of the seventeenth century. Mr. Pepys, secretary of the British admiralty, in 1661, speaks of "tea, (a China drink,) of which," he says, "I had never drank before." Three years later, the Dutch East India Company presented two pounds and two ounces to the king of England, as a rare and valuable offering; and, in 1667, this company, by the importation of one hundred pounds, commenced a traffic that has grown to the magnitude of thirty million pounds, for home consumption alone, in England, yielding a revenue to the government of about £4,000,000 per annum. The value of the tea imported into the United States, in the year ending June 30, 1858, was \$7,261,815, and, in the succeeding year, \$7,388,741.

The use of tea as a beverage was, for a time, strenuously resisted in Europe, on the ground of its alleged deleterious influence on the human constitution. Many diseases were declared to be aggravated, if not superinduced, by it, and manifold evils were predicted from the importation. This should not be a subject of surprise; since, like many other luxuries, and especially vegetable narcotics, tea is repulsive to the natural appetite, and its effects, when used in excess, are very powerful, and, it may be, hurtful to an organization not habituated to its use. But it is now generally conceded throughout the civilized world, not only that tea is far less pernicious and offensive than any of the various excitants or stimulants it has displaced, but that it has proved a positive benefit to the world, with as few evidences of injury from its abuse as exist in relation to any article of luxury, or of food, with which we are acquainted. The chemical principle characteristic of tea, coffee, and cocoa, has been found one and the same, and has been called, indifferently, theine and caffeine. Dr. Ure remarks that the proportion of azote in theine or caffeine is much greater than even in any animal compound, urea and uric acid excepted, and adds: "Since so many different nations have been, as it were, instinctively led to the extensive use of tea, coffee, and chocolate, as articles of food

and enlivening beverage, which agree in no feature or property but in the possession of one peculiar chemical principle, we must conclude that the constitution of these vegetable products is no random freak of nature, but that it has been ordained by Divine wisdom, for performing beneficial effects on the human race."

Various writers have made conjectures with respect to the time and manner of the discovery, by the Chinese themselves, of the properties and uses of tea; but, as with most questions respecting the social history of China, all is vague and unsatisfactory. A passage has been quoted from an ancient work, entitled, "Periplus of the Erythræum Sea," (the Red sea, or Arabian gulf,) which Vossius Vincent and other writers have regarded as relating to the betel nut; but which Rhind, in his "Vegetable Kingdom," recites as descriptive of the tea plant and its cultivators eighteen centuries ago: "There used to come, yearly, to the frontier of the Sinæ, [a people inhabiting the southeasternmost part of Asia, supposed to be the same as the Cochin-Chinese,] a certain people called Sesatæ, with a short body, broad forehead, flat noses, and of a wild aspect. They came with their wives and children, bearing large mats full of leaves, resembling those of the vine. When they have arrived on the frontier of the country of the Sinæ, they stop and spend a few days in festivity, using the mats for lying upon; they then return to the abode of their countrymen in the interior. The Sinæ next repair to the place, and take up the articles which they left; and having drawn out the stalks and fibres, they nicely double the leaves, make them into a circular shape, and thrust into them the fibres of the seeds. Thus three kinds of *malabathrum* are formed; that from the larger leaf is called *hadrosphærum*; that from the middling one, *mesosphærum*; and from the smaller, *microsphærum*." The fact that any reliance has been placed upon this statement, for the purpose of proving that tea was known to the Greeks or Romans in the first century, but serves to show how destitute the civilized world was of all knowledge of it prior to the era of its introduction, in the seventeenth century.

However remarkable it may be that a product, destined to become essential to the people of every nation, and to constitute an important commodity in the commerce of the world, should so long remain hidden from our knowledge, it is still more anomalous that, for two centuries after its general adoption, the culture of it should still be limited, with comparatively inconsiderable exceptions, to the regions in which it is indigenous, viz: to China, Tonquin, Japan, and Assam, in India, in which last-named country, though the plant always existed abundantly in a wild state at the base of the Himalayan mountains, its cultivation and the manufacture of its product, and the introduction of plants from China, have been but recently commenced. The first stimulus to this enterprise was given by Dr. Royle, who, in 1807, directed attention to the subject, and induced the formation of the Assam Tea Company, which now exports large quantities of tea of superior quality, chiefly, it is represented, from the indigenous plant (*Thea assamica*), which is regarded there as a distinct species. The cultivation of tea is also prosecuted with success in Penang, more than a third of the

population of which is composed of Chinese; and in Java, where, in a population of nearly 10,000,000, there are more than 100,000 Chinese. From Java, the exports of tea were valued, in 1848, at \$336,206. The plant was introduced to both these islands from China, the experiment in Java, initiated by the Dutch proprietors, having precedence of all other attempts of the kind.

On this continent, Brazil has gone before us in the adoption of the Chinese plant. Here, although comparatively little effort is required for the subsistence of man; although an indigenous plant, the maté, (*Ilex Paraguayensis*,) is in general use among the people; although coffee, long a staple product of the country, is of equally general consumption; and although an inveterate prejudice exists in favor of the manufactured tea of importation, yet the culture continues to increase and to gain favor among the people, insomuch that it may be regarded as an established branch of industry. In a letter from Mr. John Rudge, of St. Paul, Brazil, who has been for many years engaged in the cultivation of tea in that province—communicated to the Patent Office in April, 1859, by the United States legation at Rio de Janeiro—the writer says: “The tea plant flourishes here, I think, equally as well as in its native country, and I can see no reason why it should not do as well in the southern regions of the United States. The valleys are best suited to it, and it delights in manure. Care should be taken not to cover the seeds too deep in planting; they should be merely hidden from the sun.\* The tea is made from the newest and softest leaves. I usually cut the tree down every year nearly to the ground, that it may produce leaves and not seeds. When it is permitted to go to seed, the leaves become hard and unfit for use as tea. The plant is a very hardy evergreen, never suffering in the slightest degree from the frosts, which greatly injure our coffee and cane in the low grounds. The home consumption is much affected by the partiality of the common people for coffee, and the prejudice of the higher classes in favor of tea brought from afar. In some instances, tea grown in this region having been sent to Rio, and there put up in Chinese boxes, and having a small proportion of Chinese tea mixed with it, has been returned to St. Paul and sold for double the price the producer would have demanded for it. But such conceits, I believe, are common to those who can afford to indulge them throughout the world.”

In the historical and descriptive sketches of “Brazil and the Brazilians,” by Rev. D. P. Kidder, D. D., and Rev. J. C. Fletcher, whose experience in that empire extended through a period of twenty years, published in 1857, an account is given of the adoption, progress, and prospects of tea culture, which merits the perusal of every American reader. These writers say:

“There is probably no other country where the culture of this Asiatic shrub has been so successful away from its native region. The Portuguese language is the only European tongue which has preserved the Chinese name (cha) for tea; and as the stranger at Rio de Janeiro and other towns of the empire passes the vendas, he is always sure to

\*The protection of two or three inches of soil will be found requisite in the United States.

see a printed card suspended, announcing Cha da India and Cha Nacional; the former is the designation given to tea from China, and the latter to the same production grown in Brazil.

“In 1810, the first plants of this exotic were introduced at Rio de Janeiro, and its cultivation, for a time, was chiefly confined to the botanical garden, near the capital, and to the royal farm, at Santa Cruz. In order to secure the best possible treatment for the tea, which it was anticipated would soon flourish so as to supply the European market, the Count of Linhares, prime minister of Portugal, procured the immigration of several hundred colonists, not from the mingled population of the coast of China, but from the interior of the celestial empire—persons acquainted with the whole process of training the tea plant and of preparing tea.

“This was probably the first colony from Asia that ever settled in the New World, of which we have authentic records. The colonists, however, were not contented with their expatriation; they did not prosper, and they have now disappeared. Owing, in part, doubtless, to characteristic differences in the soil of Brazil from that of China, and perhaps as much to imperfect means of preparing the leaf when grown, the Chinese themselves did not succeed in producing the most approved specimens of tea. The enthusiasm of anticipation, being unsustained by experiment, soon died away; and near the city of Rio de Janeiro, the cultivation of tea has dwindled down to be little more than an exotic grown on a large scale at the botanical gardens.

“As a government matter, it was a failure; but several Paulista planters took up the culture, and, though they encountered years of discouragement, they have lived to see it, though as yet in its infancy, one of the most flourishing and remunerative branches of Brazilian agriculture.

“Between Santos and San Paulo, near San Bernardo, I saw large and productive tea plantations. The manner of its culture differs but little from that adopted in China. Tea is raised from the seed, which, being preserved in brown sugar, can be transported to any portion of the country. These little tea balls are planted in beds, and then, in the manner of cabbage plants, are transported to the field, and placed five feet apart. The shrubs are kept very clean, by the hoe or by the plough, which, though a recent introduction, has on some plantations been eminently successful for this purpose.

“The shrubs are never allowed to attain a height of more than four feet; and the leaves are considered ready for picking the third year after planting. The culture, the gathering, and the preparation of tea are not difficult, and children are profitably and efficiently employed in the various modes of arranging it for market. The apparatus used is very simple, consisting of—1. Baskets, in which the leaves are deposited when collected; 2. Carved frame-work, on which they are rolled, one by one; 3. Open ovens, or large metallic pans, in which the tea is dried by means of a fire beneath. Women and children gather the leaves and carry them to the ovens, where slave men are engaged in keeping up the fire, stirring, squeezing, and rolling the tea, which operations are all that it requires before packing it in boxes for home sale, or for exportation to the neighboring provinces.

"The tea plant is a hardy shrub, and can be cultivated in almost any portion of Brazil, though it is, perhaps, better adapted to the south, where frosts prevail, and which it resists. If left to itself in the tropics, it will soon run up to a tree. The coffee tree requires rich and new soil and a warm climate, unknown to frosts; but the tea plant will flourish in any soil. Dr. —, who visited various portions of China, is of the opinion that the cha can be grown in any part of the United States, from Pennsylvania to the Mexican Gulf. There are not many varieties of the plant, as is often supposed, black and green teas being merely the leaves of the same tree, obtained at different seasons of the year. The flavor is sometimes varied, as that of wines from the same species of grape grown on different soils. The plant is not deciduous, as in China, and in Brazil is gathered from March to July, which, in the northern hemisphere, would correspond to the interval between September and January.

"I was informed that several million pounds are now annually prepared in the provinces of San Paulo and Minas Geraes, and its culture is on the increase.

"Some years ago the tea planters were greatly discouraged; for the cha was badly prepared, was sold too new, and hence the demand did not increase. But, since a greater experience in its culture and preparation, a better article for this favorite beverage has met with corresponding encouragement. Formerly, the cultivators said that, if they could obtain sixteen cents per pound, wholesale, it would be as remunerative as coffee. In 1855, twenty cents for the poorer article could be obtained; and for superior qualities, the greater portion of the crop, forty cents per pound, wholesale, was readily commanded. The demand for it is constantly increasing. When rightly prepared, it is not inferior to that imported from China. Much, indeed, of the tea sold in the province of San Paulo as cha da India, has merely made the sea-voyage from Santos to Rio de Janeiro, and there, after being packed in Chinese boxes, is sent back to the Paulistas as the genuine aromatic leaf from the celestial empire. I have seen foreigners in Brazil, who esteemed themselves *connoisseurs* in tea, deceived by the best cha nacional.

"A few years ago Mr. John Rudge, of the province of San Paulo, sent some tea from his plantation as a present to his relatives in Rio de Janeiro. This was prepared very nicely, each separate leaf having been rolled by the slaves between the thumb and forefinger until it looked like small shot. It was thus invested with a foreign appearance, packed in small Chinese tea-caddies, and shipped at Santos for the capital. When the caddies arrived, they were seized at the custom-house as an attempt to defraud the revenue. It was, on the other hand, insisted that the boxes contained cha nacional, although by neglect they did not appear upon the manifest. The parties to whom the tea had been sent offered to have it submitted to inspection. The caddies were opened, and the custom-house officials screamed with triumph, adding to their former suspicions the evidence of their senses, for the sight, the taste, the smell of the nicely-prepared tea proclaimed emphatically that it was cha da India, and that this was an attempt to defraud his Imperial Majesty's customs. It was not until letters

were sent to Santos, and in reply the certificates of that provincial custom-house had been received, that the collectors at Rio were satisfied that there was no fraud, and that the province of San Paulo could produce as good tea as that brought around the Cape of Good Hope.

"A few years may suffice to show, on the pages of the 'Commerce and Navigation' of Great Britain and the United States, that tea enters largely into the articles of importation from Brazil. Fifty years only have elapsed since the first cargo of coffee was shipped from Rio de Janeiro, and now Brazil supplies two thirds of the coffee of the world. The revolution in Hayti was the commencement of a new era for the coffee of Brazil.

"In 1846, Dr. — learned that several planters were about to root up their tea shrubs. He besought them not to carry out their intention, 'for,' said he, 'there is to be a great revolution in China, [in 1845 he had been informed, in the Celestial empire, of the existence of the Triad society,] and the price of teas will be sure to go up in a few years.' The disheartened planters were encouraged to go on, and only a short time before my visit to Limeira, one of these fazendeiros sent to Dr. — several pounds of most excellent tea, at the same time assuring him (the doctor) of his deep gratitude for having been prevented from the destruction of his plantation. He had found it exceedingly remunerative, and next year he intended to enter into more extensive operations.

"Throughout the world the use of tea is becoming as universal as that of coffee, and any continued disturbance in China must bring into prominent notice the tea culture of Brazil. The product is now almost entirely used within the empire; but the adaptability of the culture to almost any portion of the immense territory, and the ease by which it can be carried on, will doubtless, in a very brief period of time, fully develop this new source of national wealth."

In the United States a single enterprise, upon a very limited scale, indifferently managed, and early abandoned, is the only experiment in tea culture of which we have any record. Junius Smith, LL. D., of South Carolina, in 1848, imported a number of shrubs of from five to seven years' growth, and caused them to be planted at Greenville, in that State. In March, 1851, they were removed to a neighboring plantation. About this period Dr. Smith wrote concerning them, as follows: "They grew remarkably last summer, and are now fully rooted, with fine large main and collateral roots, with an abundance of fibrous radicles. They all stood the snow, eight or nine inches deep upon the level, on the 3d of January, and the severe frosts of winter, without the slightest covering or protection, and without the loss of a single plant. They are now all forming part of the plantation, composed of those received from China last June and a few planted the first week in June, which germinated the 17th of September. All these young plants were thinly covered with straw. Some of them have lost their foliage, others have not; the stems do not appear to have sustained any injury; the fresh buds are beginning to shoot. I cannot help thinking that we have now demonstrated the adaptation of the tea plant to the soil and climate of this country, and succeeded in its permanent establishment within our borders." Little

more is known of these plants, except that, being neglected, they have perished, unless a few isolated specimens have been preserved as subjects of curiosity. Last spring, however, Mr. S. P. Buckley, a well-known writer on horticulture, communicated to a New York periodical (the "Country Gentleman") the following statement: "A few days ago I drank a cup of real American tea, from the Chinese tea plant, of which Dr. J. P. Barratt, near New Market, South Carolina, has a fine shrub about four feet high, which has borne fruit during several years. By its side was a thrifty specimen of the olea fragrans, or Chinese olive, with which the tea is scented. \* \* \* I was recently at Greenville, in this State, where Junius Smith, some years ago, essayed its culture. I was told that his experiment was by no means a true test. His soil was barren, and he took no pains to improve it. The plants did not receive proper nourishment, and, not being used to such treatment, they pined and died."

Although many varieties of tea are known in commerce, they are not the products of as many different species of the tea plant. Burnett says, (see "Outlines of Botany:") "Of the genus thea there are but three or four known species, and of these two only, viz: thea viridis and thea bohea, afford the leaves which are so extensively used in infusion, as the common morning and evening beverage in this country, (England,) and in other parts of Europe, as well as in China. Indeed, some authorities declare that the black and green teas are not the produce of different species, but merely varieties of thea viridis, which, according to soil and culture, will produce either green tea or black; and that the thea bohea of botanists does not enter essentially into the manufacture, although its leaves, as well as those of different species of camellia, may be introduced accidentally, or be mixed designedly, as an adulteration." These are the commonly received opinions on this subject, but Mr. Fortune, whose opportunities of obtaining correct information have been very ample, asserts that both green and black tea are made from each of the two species named, the difference in the article produced depending upon the period of gathering and the process of manufacture.

But one species forms the subject of the present experiment—thea viridis. For the instruction and guidance of the American cultivator the following information has been elicited from Mr. Fortune, in response to inquiries presented to him by the Patent Office concerning the culture of the tea plant in China and India:

The principal tea districts in China, which supply the greater portion of the teas exported to Europe and America, lie between latitude 25° and 35° north; the finest districts between 26° and 35°, and between longitude 110° and 120° east of Greenwich. The Indian districts in which tea is cultivated, between the 26th and 32d degrees of north latitude, and the 75th and 95th degrees of east longitude. The chief districts are Assam, Cachar, Dehra-Dhoon, Almorah, and Kangra, in the Punjab.

In China, the lower slopes of the hills are preferred, at 1,000 feet above the level of the sea; in India, from 2,000 to 6,000 feet. The best description of soil for the tea plant is a light loam, well mixed with sand, and enriched with vegetable matter, moderately moist, but

neither wet nor sour. Sloping or undulating land of this kind, on which good crops of millet and Indian corn may be produced, is likely to be suitable. Any aspect will do, but east and west are preferred. The tea plant will not flourish in a wet or stagnant soil. Those on which it succeeds best vary in their constituent elements in the several districts. With respect to climate, the following abstract of observations in the open air, in a shaded situation, at Shanghai, in latitude 31° 20' north, the maximum of the day, and the minimum at night, taken by a self-registering thermometer, will afford satisfactory data for comparison. In the tea mountains, to the west of this, the thermometer sinks several degrees lower in the winter months:

*Abstract of Observations.*

Years 1851 to 1858, inclusive.		Maximum by day.	Minimum by day.	Maximum by night.	Minimum by night.	Average by day.	Average by night.	Rainy days.	Amount of rain.
January,	1851.....	65°	42°	45°	24°	51°	33°	7	1 <sup>1</sup> / <sub>4</sub> in.
	1852.....	66	25	40	18	48	30	3	
	1853.....	66	30	43	18	45	30	10	10 <sup>3</sup> / <sub>4</sub>
	1854.....	67	32	53	24	51	37	9	3
	1855.....	52	33	40	18	44	25	4	1 <sup>1</sup> / <sub>2</sub>
	1856.....	54	40	42	18	47	20	7	2 <sup>1</sup> / <sub>2</sub>
	1857.....	58	34	44	18	49	30	3	4 <sup>3</sup> / <sub>4</sub>
	1858.....	57			27	46	35	16	
	February,	1851.....	65	38	42	26	49	34	10
1852.....		60	38	40	19	45	31	13	2 <sup>2</sup> / <sub>8</sub>
1853.....		56	33	40	20	45	31	11	1 <sup>1</sup> / <sub>2</sub>
1854.....		62	32	43	25	44	32	12	5 <sup>1</sup> / <sub>2</sub>
1855.....		68	35	45	18	51	30	5	4 <sup>1</sup> / <sub>2</sub>
1856.....		60	30	42	15	44	31	13	4 <sup>3</sup> / <sub>4</sub>
1857.....		65	38	45	28	50	36	13	4 <sup>3</sup> / <sub>4</sub>
1858.....		68			28	47	36	11	
March,		1851.....	63	40	55	28	52	41	16
	1852.....	62	43	45	33	51	38	12	3 <sup>1</sup> / <sub>2</sub>
	1853.....	67	46	57	35	56	42	10	5 <sup>5</sup> / <sub>8</sub>
	1854.....	67	42	47	32	52	41	10	3 <sup>3</sup> / <sub>8</sub>
	1855.....	72	36	57	30	55	41	11	4 <sup>1</sup> / <sub>2</sub>
	1856.....	73	40	50	26	55	39	6	1 <sup>3</sup> / <sub>4</sub>
	1857.....	72	45	56	31	54	43	10	5
	1858.....	72			33	53	41	10	
	April,	1851.....	70	50	56	33	59	48	21
1852.....		72	50	61	35	62	48	10	1 <sup>1</sup> / <sub>4</sub>
1853.....		79	50	60	38	63	50	17	6 <sup>1</sup> / <sub>2</sub>
1854.....		75	56	60	40	64	49	10	2
1855.....		82	52	67	37	63	51	15	11 <sup>1</sup> / <sub>2</sub>
1856.....		88	54	62	42	65	51	9	3 <sup>3</sup> / <sub>8</sub>
1857.....		78	53	62	36	66	54	10	3 <sup>1</sup> / <sub>2</sub>
1858.....		85			41	67	49	10	
May,		1851.....	83	60	68	47	70	57	5
	1852.....	84	60	68	52	73	60	8	1 <sup>1</sup> / <sub>2</sub>
	1853.....	86	62	68	50	72	59	11	4
	1854.....	84	64	70	37	73	61	15	5 <sup>1</sup> / <sub>2</sub>
	1855.....	90	60	73	50	74	63	18	8 <sup>1</sup> / <sub>2</sub>
	1856.....	92	60	73	46	73	61	11	4 <sup>1</sup> / <sub>2</sub>
	1857.....	82	65	70	50	71	59	14	7 <sup>1</sup> / <sub>4</sub>
	1858.....	83			54	70	59	16	

ABSTRACT—Continued.

Years 1851 to 1858, inclusive.		Maximum by day.	Minimum by day.	Maximum by night.	Minimum by night.	Average by day.	Average by night.	Rainy days.	Amount of rain.
June	1851.....	83°	68°	75°	60°	77°	67°	10	11 in.
	1852.....	99	66	81	58	81	73	17	5½
	1853.....	93	70	78	59	81	69	13	4
	1854.....	90	71	80	62	79	69	10	7¼
	1855.....	90	73	79	56	79	70	7	5
	1856.....	88	68	77	64	80	66	3	2
	1857.....	90	67	78	59	82	70	11	6½
	1858.....	97	.....	.....	59	80	68	10	.....
July,	1851.....	96	70	81	66	88	75	7	4¼
	1852.....	100	82	81	75	92	78	8	3¼
	1853.....	99	83	81	77	90	80	2	.....
	1854.....	98	72	84	70	86	78	13	14
	1855.....	94	82	82	73	89	78	8	5
	1856.....	96	77	81	70	89	78	2	5½
	1857.....	96	75	80	74	89	78	7	.....
	1858.....	94	.....	.....	68	87	76	16	.....
August,	1851.....	93	76	82	63	87	77	11	9
	1852.....	94	82	82	67	88	76	7	3¼
	1853.....	95	82	80	70	86	73	13	13½
	1854.....	99	75	81	65	89	79	10	8
	1855.....	99	83	81	75	87	78	12	7½
	1856.....	95	85	82	74	90	79	6	1
	1857.....	96	76	80	68	89	76	5	2
	1858.....	90	.....	.....	67	83	74	14	.....
September,	1851.....	89	66	77	51	78	67	11	4½
	1852.....	92	70	79	56	79	66	10	6½
	1853.....	90	70	78	64	82	70	12	7½
	1854.....	90	66	79	59	80	69	9	4
	1855.....	88	70	78	58	81	70	8	4¼
	1856.....	90	70	80	58	82	72	15	4½
	1857.....	88	65	80	60	79	68	17	11½
	1858.....	87	.....	.....	63	80	70	14	.....
October,	1851.....	90	57	72	43	70	51	10	1¼
	1852.....	83	62	70	49	74	58	4	2¼
	1853.....	88	65	77	46	73	60	6	1¼
	1854.....	88	63	70	50	74	60	5	1
	1855.....	80	65	69	45	73	58	3	1¾
	1856.....	84	60	73	45	70	59	11	5½
	1857.....	82	60	75	53	72	60	12	5¼
	1858.....	76	.....	.....	45	70	57	5	.....
November,	1851.....	76	55	60	41	66	48	10	4¾
	1852.....	80	53	62	32	64	48	2	7
	1853.....	76	48	65	32	66	50	14	4¼
	1854.....	76	52	60	31	66	45	3	1½
	1855.....	78	55	62	33	62	49	11	4
	1856.....	75	60	57	32	68	45	.....	.....
	1857.....	78	50	62	39	62	46	6	2¼
	1858.....	73	.....	.....	26	63	44	.....	.....
December,	1851.....	64	45	47	25	54	36	5	.....
	1852.....	65	42	52	19	54	32	1	.....
	1853.....	66	40	46	27	54	38	3	.....
	1854.....	66	40	46	26	55	39	4	.....
	1855.....	73	40	43	22	60	36	.....	.....
	1856.....	76	38	47	26	57	35	3	.....
	1857.....	64	.....	.....	31	53	42	12	.....
	1858.....	57	.....	.....	31	51	40	18	.....

In the Fokien districts, where black tea is generally produced, the ice is never of any considerable thickness, and the snow lies only on the tops of the mountains, rarely so far down as the tea plantations. In the northern districts of Hwuychow, Honan, and Hopek, ice is often found from two to four inches thick, the ground frozen six to eight inches, and the snow from one to two feet deep, though rarely, as the winter months are comparatively dry. But the sun, even in winter, has considerable power, and the snow does not lie long on the ground. A climate having abundance of rain is advantageous to this plant, particularly if the rain falls in the spring and summer months, say from April to July.

The tea plant is an evergreen, not unlike the camellia, though by no means so retentive of its leaves in winter. Sometimes the plants are ten feet high in a wild state, but they never form stems of great thickness, two or three inches in diameter being the largest. The young leaves only are gathered, and in young plants they are usually from two to three inches long. Some kinds of fine teas, such as the flowery "Pekoe," are made of partially developed leaves. When the leaves are very large and succulent, they are not considered suitable for the manufacture of good tea, especially if they are old. When produced from seeds, the tea plant first flowers in the second year, rarely in the first. It is not usual to propagate it from cuttings in China, but it would no doubt flower the first year if the cuttings were taken from full-grown plants. The usual period of flowering is in November, and the seeds ripen the next autumn. The number of seeds produced by a shrub depends upon its size and health. Vigorous plants produce fewer than the sickly and stunted. A great number of the young clusters are pulled in gathering the leaves, and may be seen in the tea brought to America. The seeds are preserved, preparatory to sowing, by being mixed with damp sand and earth. They are sown at any time after they are ripe before April of the following year. Beds about four feet wide are prepared, and the seeds are sown in rows across these beds in the way common in our nurseries. In the field they are planted four or five in a hole,\* the bunches usually about four feet from each other, in rows. The ground is prepared for planting by being dug, or trenched, in the usual way. Manure is rarely used in tea culture in China; but where the land is poor, stable litter and sewage of all kinds are sometimes applied, indiscriminately, in moderate quantities, and a top-dressing of rich loam is considered valuable. The best time to apply manure is in the spring, before the plants begin to grow, or during mild weather in winter. In transplanting, if the ground has been well prepared, the holes need not be much larger than the size of the roots requires; but if this has not been the case, the holes should be at least eighteen inches in diameter and in depth. The same rules apply to tea plants and to our fruit trees. The shrubs should be planted about as deep as in their original beds. The roots of a full-grown shrub ordinarily descend two to three feet, and extend laterally from the stems about two feet on each side. The plant usually attains a height of from three to five feet, when fully grown in a cultivated

\* Singly, it is believed, will be the preferred mode in this country.