about half as much again as in black, and the former always yield less moisture, doubtless because of the harder fibre produced by the method of manufacture and the frequent use of a facing medium. A large percentage of moisture found in any sample would indicate improper condition. At the stage of final firing, tea is supposed to be desiccated as completely as possible, and it is then sealed up to exclude air entirely. It is, however, most liable to absorb moisture upon subsequent exposure. Caffeine (formerly known as theine) is the alkaloid of tea, and is identical with that of coffee, guarana, mate and kola nut. It is closely allied to theobromine, the alkaloid of cocoa, and also to uric acid. In large quantities it is a poison, but in smaller quantities it acts as a stimulant. It exists in greater percentage in Indian and Ceylon teas than in those from Java, and is lowest in China and Japan teas. Tannin is a hardening and astringent substance, and in large quantities impairs digestion. Prolonged infusion increases the amount extracted. The essential oil of tea is of a citron yellow colour; it is lighter than water and possesses the distinctive odour of tea. Extract varies from 26 to 40 per cent., and is no guide to quality. Ash averages 5∙7 per cent., about half of which is soluble in water. About 8 per cent. of ash is proof of adulteration.

*Commercial.—*There is probably no article of large consumption the commerce in which has been so revolutionized during a single feneration. In 1877, except to the initiated, tea meant China tea. India and Java were producing a little, but practically for use only in Great Britain and Holland. Formosa and Japan were beginning to attract attention in America, but China supplied the world, and almost entirely through the medium of the London market. The days of sailing ships from China had not entirely passed, and the steamers of the period were built for rapidity of transit to London. The Australasian colonies got their supplies direct, and part of the Russian supplies went by the caravan routes.

By 1907, however, the greatly increased production in India and Ceylon, with the willingness of many nations to drink such teas, in preference to those of China, had left to her Russia as a customer for nearly half her export of the article, a proportion rapidly diminishing, as that country too turned in the direction of using the stronger varieties.

China and Japan have hitherto been regarded as the chief pro­ducers of tea, and the reputed large domestic consumption of those Mongolian peoples has led to assumptions of vast internal pro­ductions. There exist absolutely no data, and it is doubtful whether such can ever be gathered, for forming trustworthy esti­mates. In both of those countries tea is grown principally in a retail manner, and much of it simply for family consumption. The country cultivator has, as a rule, only a small area—perhaps a corner of his farm or garden—planted with tea, the produce of which is roughly sun-dried and cured in a primitive manner. Any surplus not needed for the family is sold in its sun-dried state to the collector, who takes it to the hong, where it is fired, blended and packed for exportation. Excluding therefore from any record the quantities produced for internal consumption in China and Japan (that from the former alone has been estimated at a total of 2,000,000,000 lb), the following are the acreage and production of the world as taken from the latest recorded statistics available in 1908 :—

Acreage under tea. Production.

lb

China .... ...@@1 188,371,000 J ouaπt∙lt∙les

„ ... (Brick tea for Tibet)1 19,000,000 I ‰r,2ted

Japan .... 121,202@@2 39,778,000 Γ ζpl∩\*d

Formosa . . . 79.858 20,300,000 ” y-

India .... 531,808 240,411,000

„ (Burma) . x,4982 3,249,000

Shan States . (mostly pickled tea)@@1 16,000,000

Ceylon .... 390,000 170,527,000

Java .... 45,000 26,2 J 5,000

Natal .... 5,000 2,750,000

726,601,000

The quantity from China includes about 16,000,000 lb im­ported from India, Ceylon and Java, and worked up with China teas into bricks and tablets.

The modern developments of production and consumption have rendered the subject of China tea one of subordinate interest, except to students of commercial evolution. In several of the earlier editions of this work very ample details arc fur­nished regarding the same, with many interesting pictorial illustra­tions of the processes of production. The conservative tendencies of the Chinese people have prevented them adopting the modern methods of extensive cultivation based on scientific principles, and the manipulation of crops by machinery in place of hand labour. Consequently,. their export trade has been for many years a diminishing one. Of the exported quantity referred to above, only 8ι,ooo,ooo lb were the ordinary black tea known to the English consumer (collectively described in the United States of America and Canada as "English Breakfast

Tea ”). Out of that total, Great Britain consumed only about 3,000,000 lb, against a consumption of 126,000,000 lb of China tea in 1879. Green tea is represented by 28,000,000 lb, and this went chiefly to the United States of America, to Central Asia and to North Africa. The remainder, 80,000,000 lb, is brick and tablet tea sent entirely to Asiatic and European Russia. The method of compressing tea into tablets or bricks is unfamiliar in western Europe. It doubtless arose from the necessity of reducing bulk to a minimum for conveyance by caravan across the great trade routes of Asia, and now that the. railway and the steamship have supplemented more primitive methods of transit, the system is still continued to meet the wants of the consumer who would not recognize his tea in any other shape. The preparation of the tea in the requisite form has, however, largely left Chinese hands. The Russians have themselves established several important factories at Hankow, which is the chief seat of this industry, and to which place they import in large quantities tea-dust and small broken tea from India, Ceylon and Java. Those are freely used in the pre­paration of small tablets, compressed to such a condition of hardness as to resemble wood or stone, and commonly passed round as currency in certain districts of Russia. Of a somewhat different nature is the brick tea prepared chiefly at Ya-chou in the province of Ssu-chuan for overland transit to Tibet, to investigate the commerce in which Mr James Hutchi­son, Μ.A., was sent in 1906 as a special commissioner for the Indian Tea Cess Committee. This tea is mostly prepared from exceedingly rough leaf, including even bush prunings, which would not be plucked for manufacturing purposes in India or Ceylon. It is “ panned,” rolled, fermented and divided into various classes or qualities. It is then steamed and placed in a moulding frame of wood to compress it into the size and shape of brick wanted. The bricks are wrapped in paper bearing hong marks, or some writing in Tibetan. For transit they are packed twelve together in hides sewn up while moist, which contract to make a strong tight package of 60 to 70 lb weight. These bales arc carried on the backs of coolies for great distances across very high passes into Tibet, and the trade is estimated at an average of 19,000,000 lb per annum, of. which 8,000,000 is a subsidy from the emperor of China to the Tibetan monasteries.

The Japanese production is almost entirely green tea for North American use. It is prepared in two distinctive classes named by the final process of manufacture applied in each in­stance, viz. basket-fired, *i.e.* dried over a hot stove in a basket, and pan-fired, *i.e.* in machine-made pans. The industry is a declining one, because of change in the American taste, and the area under.cultivation has diminished by nearly 20 per cent. in the ten years since 1896. The mulberry leaf for the more profitable silk trade has taken its place. The export production of the island of Formosa is limited to a particular class of tea termed Oolong, practically all produced for the United States of America. It is scarcely known in England save by experts. The Tea Cess Committees of India and Ceylon have both sent representatives in recent years to study the manner of growth and production, but in neither country has there been so far any successful attempt to produce commercially tea of the class. A radical difference exists in connexion with the method of growth, in that the plants are never grown from seed, but are always propa­gated from layerings. Soil, situation and climatic conditions have doubtless much influence on the peculiar character of the tea pro­duced. The manufacturing methods are elaborate and careful, and the produce has in its choicest qualities a particular delicacy and bouquet possessed by no other variety of tea.

As the planting, productive and manufacturing processes of India may be taken to be generally representative of Ceylon and Java also, and therefore of the tea of modern commerce in most lands outside of China and Japan, the methods followed will be described with some fullness.

A rich and exuberant growth of the plants is a first essential of successful tea cultivation. This is only obtainable in warm and moist localities where rains are frequent and copious. The climate indeed which favours tropical profusion of jungle growth—still steaming heat—is that most favourable for the cultivation of tea, and such climate, unfortunately, is often trying to the health of Europeans. It was formerly supposed that com­paratively temperate latitudes and steep sloping ground afforded the most favourable situations for planting, and much of the disaster which attended the early stages of the tea enterprise in India is traceable to this erroneous conception. Tea thrives best in light friable soils of good depth, through which water percolates freely, the plant being specially impatient of marshy situations and stagnant water. Undulating well-watered tracts, where the rain escapes freely, yet without washing away the soil, are the most valuable for tea gardens. Many of the original Indian plantations were established on hill-sides, after the example of known districts in China, where hill slopes and odd corners are commonly occupied with tea-plants.

The methods described hereafter are those generally followed in India and Ceylon in the manner of the most modern application,

@@@1 Areas unascertained.

@@@2 Official figure, but accuracy doubtful.