

Camphor Industry.

The island of Formosa, or, as named by the Portuguese, "the beautiful island," and known to China as Taiwan, signifying "terrace bay," is the place where most of the camphor of Western commerce is produced.

The island is a most productive one, alike rich in vegetation and minerals, but it is the geographical position which makes it a place of extreme importance with regard to the Eastern trade. Swatow, Amoy, and Foo-choo lie within the Formosa Channel, while every vessel bound to and from the northern ports and Japan must pass through it. The total value of the foreign trade of Japan is over twelve millions, and of this Great Britain absorbs more than two-thirds. Of the many products of Formosa, the chief is camphor, and the greatest part of this product is obtained from the wood of a tree, the *Camphora officinarum*, belonging to the natural order, *Lauraceae*, but, unfortunately, the laurel grows only in certain districts in the island, chiefly in that portion included within Chinese territory; it is mainly confined to the country of the aborigines and its immediate borders. In consequence of the disturbed relations between the races of the island thus induced on the borderlands, the risk attending camphor collection is very great, the distillers requiring to be always on their guard, for a Chinaman's head is a patent of nobility to an aborigine, for without one he is excluded from the council of his tribe, and, owing to the disturbed state of affairs in the East generally, camphor is likely to be a somewhat scarce commodity for years yet to come. The trade returns for four months to April 30th last show only 4,785 packages imported into England, as against 13,204 in 1894, and 8,631 in 1893, for the same period. To such as are unacquainted with Formosa, it is quite impossible to describe a virgin forest such as those met with in the island. The vegetation generally is characterized by tropical luxuriance, and in the mountain regions in the dense forests the various species of palms, aloes, and the magnificent camphor trees are conspicuous; the last covers the whole line of mountains from north to south up to an elevation of 2,000 feet above sea level. The tree grows to a considerable height, sometimes as much as 50 feet, and has a girth of 20 feet, with branches of 8 or 9 feet in circumference; the leaves are smooth, and the trunk is covered with a flat, greenish bark; the whole, with the roots and wood, have a strong odor of camphor. This product is found to lodge everywhere in the interstices of the fibres of the wood, also in the pith, but most abundantly in the crevices and knots. From the dangerous circumstances connected with the collection of the drug, there is a great possibility of its extinction, as the extraction of the camphor entails the destruction of the tree, and this destruction has never

been compensated by re-planting; so that the forests are being gradually cleared away, the aborigines receding, and the Chinese encroaching as the work of destruction has progressed. But, somewhat to counteract this evil, the laurel has received attention from experts, and has now become naturalized in some of the tropical and warmer countries, such as Java, Brazil, Jamaica, and the West Indies generally, Mauritius, Madeira, and the Mediterranean region. It forms a large and handsome tree in sheltered spots in Italy, as far north as Maggiore; it may be found in the nurseries of Paris, and is not altogether unknown in England.

But it is Formosan camphor that we specially note, and it is a novel and exciting adventure to accompany a band of camphor merchants meaning business, taking our lives in our hands, as the whole work, from beginning to end, has to be done in an enemy's country, and that enemy of a relentless character. Preparations being duly made, not only for collecting and producing the drug, but for our own sustenance and protection, the party sets out, the district having been prospected beforehand and the spots selected. The trees chosen are those remarkable for the abundance of their sap, many being too dry to repay the cost of time and labor. The best part of the wood is secured for timber, which is in much request for carpentry and cabinet work. The branches and refuse are then taken while freshly cut, and chopped into small pieces for distillation.

The stills, built up in sheds, are of the simplest and rudest construction; these are moved as the advance is made from stage to stage, so that elaborate fittings would be cumbersome and out of place owing to this shifting at short intervals. About eight or ten fires are laid on the ground, over which is placed a long trough made of wood; this trough is lined with clay and half filled with water; upon this boards are placed, pierced with holes which fit the trough; then rough jars are fixed containing the chips, which have been already prepared. These, again, are covered with inverted jars, and the whole made air-tight by packing.

The fires are now lit, and the steam passes up through the holes in the boards, this soaks the chips in the jars and causes the sublimated camphor to settle in crystals on the insides of the p.c.s. from which it is scraped off, and then passes through a second process of distillation in order to remove impurities. At the bottom of a copper still is placed a bed of dry, powdered earth, if possible from an old wall—but this is not often get-at-able in a primeval forest—for the sake of the lime it contains, and on this is laid the crude camphor; this is again covered with earth, and so on alternately, until the vessel is full, the whole terminating with a layer of earth, which is finally covered with green mint. A second vessel, generally made of straw smeared with clay on the out-

side, is placed over the still and luted on. This is then fixed over a fire, and allowed to remain for a considerable time. After cooling, the camphor is found sublimed and attached to the upper vessel. When a sufficient quantity is obtained, it is then packed in large vats or tubs provided with escape holes at the bottom, and through these holes exudes an oily liquid known as camphor oil, of a yellowish brown color. The exudation from the mass is to the extent of about 3 per cent. This liquid is of a very strong smell, and holds in solution an abundance of common camphor, which it deposits in crystals when exposed to a low temperature, its density being 0.910. By exposure to oxygen, or the action of nitric acid, it absorbs oxygen and becomes solid camphor. This oil is much used by Easterns as an embrocation in rheumatic diseases, and bids fair to become a valuable European import as a cheap substitute for *Lin. camphor.* It is not, however, saleable on the spot, as it is inferior to the Malagan camphor oil, from which it is distinguished by the odor of sassafras. In Japan the oil is used for lighting purposes by the poor folk, and it is said to be superior to kerosene both in cheapness as well as in illuminating power.

The product of the forests, in a crude state, is shipped from Tamsui, which is a free trade port at the northern extremity of the island, this being the characteristic export of the place, forming, as it does, the main supply of the European markets.

From this place it is conveyed by native crafts to various ports of China. Until the year 1868 the Chinese government enjoyed a monopoly of the Formosan camphor trade, but it was then thrown open, with very beneficial results. In 1870 and 1871 attempts were made to re-establish the monopoly under cover of a tax of less than a farthing per pound, in itself unimportant; but with the removal of the objectionable feature of the import the merchants have rested content. But as the supply of the trees and laurels in the island is being gradually exhausted, other countries have considered the matter, especially those adjacent. A small quantity of the drug is produced at Chinchew, in the province of Tokien, on the China mainland. The method of preparation here differs somewhat from that of Formosa. The freshly gathered branches of the laurel are chopped into small pieces and steeped for some days in water, they are then boiled in a suitable vessel, being continuously stirred with a stick until the grains adhere to it in the form of a white jelly. The fluid is then poured off into glazed vessels and allowed to rest for some hours, when the camphor is found in a concreted mass. In Japan the laurel is found in the three principal islands. It flourishes best in the southern portions of the empire, Toza and Sikok; the mild, damp sea air favors its growth, and the principal preparation of