

EMPIRE SPICES

THEIR PRODUCTION AND IMPORTANCE*

SPICES, like vitamins, might well be described as "accessory food factors." Although, generally speaking, devoid of any nutritive value, their judicious use serves to render food more palatable and to stimulate the digestive powers. In virtue of the essential oils which they contain, many spices exercise a useful carminative action and, moreover, possess valuable antiseptic powers.

Outside the industries in which spices are employed, their importance is perhaps, not as fully realised as might be desired. Apart from their use in the culinary arts, spices find many useful applications in the perfumery industry. Many are employed medicinally, whilst from some of them, valuable chemical products are obtained. In connection with this last application an extremely interesting and very important process, in which what is practically tantamount to the conversion of one spice into another is effected, calls for special mention. From the essential oil obtained from cloves a substance known as "eugenol" is isolated which, by appropriate chemical means, is converted into vanillin, identical in every way with vanillin obtained from vanilla pods, which is the chief odorous constituent of this spice. The process, which is essentially an English one, is also applicable to the essential oil of cinnamon leaf, and the vanillin manufactured by it is generally regarded as being superior to vanillin made on the Continent by a different process from guaiacol.

One naturally associates the cultivation of spices with the flowery and aromatic East. Whilst, however, the contribution of Asia to the spice markets of the world is very considerable, there are many important centres of spice production elsewhere. The British Empire is rich in spice-producing lands, and, in addition to India and Ceylon, mention must be made of Zanzibar, Sierra Leone, Seychelles and the British West Indies as important spice-producing colonies.

The Moluccas or Spice Islands, the home of both the clove and the nutmeg, were discovered by the Portuguese in the sixteenth century and in 1619 passed into the hands of the Dutch, who, in order to keep up prices, did all in their power to limit production. A similar policy was adopted by them in Ceylon, which at one time was the only country producing cinnamon, all excess of the spice over a certain stipulated amount per annum being burnt.

Naturally such a short-sighted policy could not continue unchallenged or for long persist. In the eighteenth century, the French were successful in smashing the clove monopoly, the spice being successfully introduced and cultivated in Mauritius. In the case of cinnamon, Ceylon passing into the possession of the British the spice remained a monopoly of the East India Company until 1833.

Cinnamon.—In any account of Empire spices, pride of place must, perhaps, be given to cinnamon, as being almost exclusively an Empire product. The spice consists of the dried bark or shoots of the Ceylon cinnamon tree, *Cinnamomum zeylanicum*. There are other species of *Cinnamomum* trees possessing aromatic barks used as spices, chief of which are Chinese cinnamon or cassia, *Cinnamomum cassia*, and Javanese cinnamon, *Cinnamomum burmanni*. These, however, are quite

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distinct from true cinnamon, both in flavour and other respects, and are less highly esteemed.

When growing wild, the Ceylon cinnamon tree has been known to attain a height of as much as 40 feet, but under cultivation it exists as a coppiced shrub. As already mentioned, its native home is Ceylon, which is the country where it is chiefly cultivated. It is also found in Southern India, and has been introduced into the Seychelles; but trees grown in the last-mentioned colony produce a spice inferior in flavour to those grown in Ceylon, and yield an essential oil of a very different character.

The essential oil of cinnamon bark is obtained by distilling the bark with water or steam, and is highly valued in perfumery for its delicious odour. It is also used as a flavouring agent and as drug. Oil distilled in England or on the Continent compares favourably with that distilled locally in Ceylon, as the latter is so often adulterated with oil obtained from cinnamon leaves. There would seem to be an opening for enterprise here, since, with modern plant operated under stringent conditions, it should be possible to produce locally an equal to that distilled in England and at a much lower cost.

The essential oil of cinnamon leaf, which is very unlike cinnamon bark oil and more closely approximates in character to clove oil, is, as already mentioned, an important source for the isolation of eugenol, from which vanillin is manufactured.

The following figures relating to the exports of cinnamon and cinnamon oils for the year 1928 will be of interest, as indicating the magnitude of the trade in these commodities. Ceylon: Cinnamon quills, 34,699 cwt.; cinnamon chips (used mainly for distillation), 11,114 cwt.; cinnamon bark oil, 9,122 lb.; cinnamon leaf oil, 36,397 lb. The quantity of cinnamon quills shows some increase over the amounts for preceding years, but the figures for the oils indicate a big drop. Seychelles: Cinnamon, 2,120 cwt.; cinnamon bark oil, 68 lb.; cinnamon leaf oil, 138,812 lb.; the exportations of cinnamon and cinnamon leaf oil both being on the upgrade. So far as India is concerned, the amounts exported are inconsiderable, the figures for the year ended March 31st being: Cinnamon, 49 cwt.; and cinnamon oil (nature unspecified), 310 lb.

Nutmegs and Mace.—It is, perhaps, not generally known that nutmegs and mace are products of one and the same tree, but such is the case. The tree in question, *Myristica fragrans*, is a native of certain of the Spice Islands, and was introduced into Ceylon in the early part of the nineteenth century. It is cultivated nowadays in a number of tropical countries, including the British West Indies, especially Grenada, which exported, in 1927, 21,238 cwt. of nutmegs and 3,733 cwt. of mace.

The nutmeg tree produces a fruit somewhat resembling a large apricot in appearance and colour. When ripe, the husk splits open, disclosing a glossy, dark-brown nut, enclosed in a peculiar netlike covering, or aril, which is of a scarlet colour.

The nuts and arils are separately dried. The dried aril constitutes mace; and the hard brown seeds, which are easily removed from the nuts, whose shells are thin and brittle, form the nutmegs of the shops. Before exportation, the nutmegs are often treated with lime as a preservative against the attacks of insects. They are graded according to size and condition, good specimens being sold as a spice whilst inferior ones may be sold as a ground spice or used for manufacturing either the distilled or expressed oil of nutmegs. The first is obtained by distilling the ground nutmegs with steam, and it is interesting to note, is much employed as a flavouring agent in the manufacture of dental creams and in the tobacco industry. The expressed oil, which is a solid fat, often erroneously called "oil of mace," is obtained by subjecting the nutmegs to hot pressure.

Cloves.—Turning our attention to cloves, this spice consists of the dried, unopened flower-buds of an evergreen tree, *Eugenia caryophyllata*, a native of certain of the Molucca Islands, and as already indicated at one time only obtainable from this part of the world. Cloves have been and still are cultivated in many countries. For a period, Penang produced what were usually regarded as the finest cloves obtainable; but the cultivation of the clove in Malaya, which is in the hands of the Chinese, has sadly declined in recent years, and Malaya can no longer be seriously considered as one of the important clove-producing colonies.

On the other hand, clove-production in Zanzibar has made very satisfactory progress. In 1927, Zanzibar exported 249,453 cwt. of cloves and 49,209 cwt. of clove stems, as compared with 183,624 cwt. of cloves and 22,491 cwt. of clove stems for 1922. Cloves are also cultivated in Ceylon and India, but the amounts exported are quite inconsiderable. It is estimated that Zanzibar and the adjacent island of Pemba produce about nine-tenths of the world's supply of cloves. The chief foreign competitors are Madagascar (French) and the Dutch East Indies.

Clove trees are usually raised from seed, and require a rich, clayey soil free from damp. Picking the unopened flower-buds and drying them, both call for special care. On distillation with water or steam, they yield an essential oil, which is employed in the perfumery and confectionery trades and is also used medicinally. This oil also provided a source for the isolation of eugenol, to which reference has already been made.

Allspice.—Allspice is another Empire spice of which mention must be made. This is not, as might be thought from its name, a mixture of various spices, but a distinct spice, better called "pimento." It consists of the dried unripe berries of a small tree, *Pimenta officinalis*, which is a native of the West Indies and Central America. The name "allspice" is given to it because the flavour is supposed to resemble that of a mixture of cinnamon, nutmegs, and cloves. Jamaica, the chief producing centre in the British West Indies, exported 88,075 cwt. of this important spice in 1927.

Allspice, it may be noted, on distillation with water or steam, yields an essential oil, which is used to some extent in soap perfumery and in preparation of bay rum. The leaves of the plant also yield an oil when similarly treated. Both oils contain a considerable amount of eugenol.

Ginger.—No account of Empire spices would be complete without reference to ginger. This spice consists of the underground rhizomes of an herbaceous perennial, *Zingiber officinale*, which is a native of Tropical Asia, but is cultivated in many tropical countries, including so far as the British Empire is concerned, Jamaica and Sierra Leone, in addition to India where it has been grown for centuries. Ginger comes on the market in two main forms, peeled and unpeeled, of which the first is the more highly esteemed. The rhizomes are dug up after the aerial parts of the plant have dried in the sun, or, in the case of peeled ginger are washed, peeled with a narrow-bladed knife, washed again, and finally dried. Sometimes the ginger is parboiled before peeling. Jamaica ginger is usually peeled and the amount exported in 1927 was 24,905 cwt. being rather less than that for 1926, but in excess of amounts for preceding years. Until recently ginger from Sierra Leone was only roughly scraped, but a better quality peeled ginger is now exported by this colony and has been well received, not only in Great Britain, but also in the United States, Canada, and South Africa. The amounts exported show a steady increase up to 1926 (55,265 cwt.), but in 1927 the amount fell to 27,354 cwt. India also exports a very considerable quantity of ginger, the amount for the year ended March 31st, 1929, being 33,126 cwt.

The uses of ginger in the confectionery trade and also as a medicine are too well known to need more than bare mention. It may be added that, in addition to being, like other spices, a useful carminative, ginger is by no means devoid of nutritive value, as it contains a considerable proportion of starch.

↳ *Pepper*.—Pepper, again, is another extremely important spice which is produced in the British Empire. Pepper is the berry of a vine-like climbing plant indigenous to the moist, low-country forests of Ceylon, South India and Malaya, and is extensively cultivated in India by both natives and Europeans, the amount exported by British India for the year ended March 31st, 1929, being 92,465 cwt. rather less than half that exported during the previous year. The plant thrives best in a hot, moist climate where there is a plentiful rainfall, and the trade in pepper is probably one of the oldest branches of commerce between Europe and the East. Certainly during the Middle Ages it was one of the most important.

The two main varieties of pepper, white and black, are both produced from the same plant, *Piper nigrum*, the difference arising from the stage at which the berries are plucked and the manner in which they are afterwards treated. Black pepper, which is the sort chiefly produced in India, is obtained by collecting the berries before they are completely ripe and drying them in the sun. White pepper, on the other hand, is obtained by soaking the ripe berries in water to bring about fermentation, after which the pulp is removed, a process usually effected by trampling the mass under feet. The fruits are then dried. White pepper is less pungent in flavour than the black variety.

It should, perhaps, be mentioned that long pepper, which is quite distinct from these, although somewhat similar to black pepper in taste and odour, is obtained from other species of pepper plant, especially *Piper officinarum*, cultivated in Java (Dutch).

In addition to those already dealt with, other spices are produced within the British Empire such as chillies, turmeric and cardamoms in India; vanilla, in very small amounts, in Dominica and Seychelles, as well as some others of less importance, about which considerations of space forbid details being given. Enough has been said, however, to indicate the position of first-class importance the British Empire occupies in the matter of spice production. Whilst that position can be viewed with pride, this is not to say that there is no room for improvement or further advancement. The possibilities of India as a spice-producing country have by no means been fully exploited; and, on the face of it, there seems to be no adequate reason why vanilla, the flavour of which is preferred for many purposes to that of artificially produced vanillin, should not be successfully cultivated on a large scale in the British West Indies.