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"Camphor Cultivation in Burma"*

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Introductory :— "Cinnamomum Camphora", the source of natural camphor is an evergreen tree belonging to the family of Laurels. In its native habitat it grows up to be a very handsome tree attaining a height of 100 feet, with large and spreading branches and a trunk of 2 to 3 feet in diameter. The tree is indigenous to the Eastern coast of China and the islands of the Japanese Archipelago. It is particularly abundant in Formosa, which produces nearly one-half of the world's supply of camphor.

The adaptability of the campror-tree to varying conditions of soil, climate, and altitude, is said to be considerable and successful cultivation of it has been accomplished in Jamaica, West Indies, California, Texas, Florida, Ceylon, Federated Malay States and East Africa.

Cultivation in Burma :— In Burma, the success that has attended the experimental plantations of the Forest Deprtment, has established beyond doubt the commercial possibility of camphor cultivation nearly all over upper Burma at suitable elevations. Camphor plants were successfully raised from seed in Myittha. Katha, Bhamo and Myitkyina. The tree is reported to grow well at Mogok Maymyo (3500 feet), and Lawksawk (3000 feet). It does not, however, thrive above an elevation of 3500 feet. At Taunggyi (4700 feet) it appears to get nipped by frost.

At Yatsawk (3200 feet) there is a large private plantation "The Burma Camphor estate" over 650 acres in extent, devoted to the cultivation of camphor. The soil here is a deep, stiff, light-brown clay gradually changing on the higher ground into a sandy loam.

Details of cultivation :—For commercial purposes the method of propagation by seeds is recommended, since attempts at vegetative propagation by cuttings have often proved unsuccessful. Camphor-seeds may be obtained from any nursery company of good repute in Hongkong or Yokohama. The seeds take a long time-often as long as three to six months-to germinate, and the

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germination is usually poor, so that great care has to be taken in making sure of a supply of absolutely fresh seeds for sowing. Camphor seeds are said to ripen in Japan in the month of November and the seeds received in January and sown immediately produce the best results.

(a) *Preparation of nurseries* :—Great care is essential in the preparation of seed-beds, which should be clean, free from weeds and of good tilth. As the seeds take a long time to germinate, sand should be added in order to make the soil sufficiently porous and prevent the seeds from rotting. It is necessary to water and shade the seedlings carefully. The sudden removal of nursery shades might involve the death of the seedlings

(b) *Method of sowing* :—The seeds should be soaked in water for 24 hours before sowing. The soaking of seeds facilitates their germination, and separates the heavy seeds from the light. The heavy seeds sink to the bottom and they are by themselves sown in rows 3 inches apart each way and about ¼ of an inch below the surface. The light seeds may be sown broadcast as only very few among them will germinate. Four pounds of seed are stated to provide sufficient plants for planting 1 acre.

(c) *Transplanting* :—The seedlings grow to a height of 12 to 18 inches during the first year. Two-year-old plants are ready for being transplanted, and transplanting operations should be commenced in the rainy season. The planting is done at intervals of 10 feet and care taken to keep the young plants free from weeds. In planting out, the leaves and small twigs should be removed, the tap-root cut back, and the small lateral roots removed, and the plants carefully planted by hand. The roots should be protected from exposure to the sun, in transit from the nursery. The seedlings should be planted in holes dug 2 feet deep and 2 feet in diameter, the earth removed from the pits being allowed to weather.

(d) *Care of the plantation* :—The subsequent cultivation requires little attention. The soil immediately round the plants should be well-worked and finely divided: Between the lines, the ground may be ploughed with a ' disc ' plough in two directions at right angles to each other, and then gone over with a disc-harrow in order to get rid of the dense growth of high grass. The grass which has not been removed by the plough should be dug out. The camphor tree appears to thrive on even poor soil, provided it

could be well-drained. The plants will not exhaust the land, as the prunings after distillation could be returned to the soil and used as mulch, so that practically no mineral matter is removed from the soil.

Yield :—The trees could be pruned for the first time when they are three years of age.

Camphor-content of leaves and twigs:—The proportion of of camphor in the leaves is said to increase as the leaves mature, young leaves containing more oil which is commercially less valuble. There is a slight decrease in the camphor-content of leaves after maturity. Air-drying of the leaves has no detrimental effect on the yield of camphor provided the direct sun is kept off. The leaves yield about 1·5 per cent by weight of crude-camphor, while the stem yields about 0·2 per cent of camphor. The yield from old twigs is less than that from young twigs, due to the fact that camphor is present chiefly in the bark and not in the new wood. The prunings should be taken to the still shortly after cutting, since exposure to the sun or rain causes a loss of camphor. Fallen leaves also may be used for distillation since their collection is easy, and camphor-content considerable.

Distillation oj camphor:—In Japan and Formosa the distillation of camphor is carried out by very crude methods, using a simple barrel, a flat kettle or boiler, and a wooden condenser. The crude camphor that is obtained is subsequently purified. The time required for distillation of a ton-charge is not more than 3 hours with a moderate quantity of stem. Any suitable still, fitted with an air-tight removable lid may be used. Metal stills also are used, and the camphor is subsequently purified by re-sublimation. The ordinary type of ' tube ' or ' coil ' condenser is found unworkable, as the passages get blocked by solid camphor. A suitably-designed galvanised-iron condenser has proved satisfactory.

Refining : – The camphor is first separated from the oil in a centrifugal machine, using warm water to remove the last traces of oil. The final stage is a process of sublimation in which the camphor is usually mixed with charcoal and lime, the sublimed product appearing in the market in the form of cubes, cakes and domes.

Uses of camphor :—The greater part of the world's supply of camphor (70 per cent) is used in the manufacture of celluloid (xylonite), while the remainder (about 30 per cent) is used for medicinal, pharmaceutical and sanitary purposes.

EXTRACTS.

On Home.

Were there no oxen feeding in the stall,
The crib were clean;
But without oxen harvest would be smal
House keeping lean;
Wherefore we may not be too prim and nice;
There is no good that doth not cast a price.
Were there no children in the house, it were
Dainty and trim;
But without children lo! the hearth were bare
And cold and dim;
Better their laughter than a chamber neat,
For only in their mirth is home complete.

(Nancy, in Scottish Farmer, August 192[illegible].

Denmark as it is.

During the past three or four years three of the great London dailies have devoted usual attention to the plight of Agriculture. First The *Times* led off with a remarkably well-informed review of the situation in England, written mainly from the standpoint of the corn grower, that is to say, specially the man who grows wheat and believes that unless wheat growing be prosperous farming is ruined. The *Daily Mail* more recently followed suit; and conducted an investigation which, so far as we can learn, was anything but well-informed. It was simply what has come to be known as "stunt" and we have seen it remarked somewhere that it would have been better for Agriculture had the *Daily Mail* left the question severely alone. The report now under review is the sequel to the correspondence which took place in the Daily Telegraph during August, 1927, under the title "Can Farming Pay?" In the course of that correspondence it was suggested that Denmark was one of the countries in which farming paid, and therefore it was considered by the conductors of the newspaper that it might be worth while sending a commission to Denmark to discover the facts. The Commission consisted of Mr. James R. Bond, M. C., M. B. E., who is not unknown in Scotland and three