

MEMORANDUM

ON

CARDAMOM CULTIVATION

IN

COORG.

BY

EDGAR LUDLOW,
ASSISTANT FOREST CONSERVATOR.

BANGALORE

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Cardamom : *Fr.* Cardamome ; *Lat.* Cardamomum ; *Gr.* καρδαμωμον from ἀμωμον *Lat.* Amomum, (*Ar.* hainâmâ from hamma, to warm or heat, the heating plant,) and καρδ for σκαρδ from *Skr.* tshhard, to vomit ; tshhardi karipu, Cardamom, literally enemy to vomiting. Yalum, *Mal* ; Aila Cheddie, *Tam* ; Yaylakooloo, *Tel* ; Yála, Coorg. Yálakki, *Can* ; Elachee, *Beng* ; *Hind* ; and *Duk*.

Cardamoms are the capsules of certain species of plants of the class Endogenæ of the N. O. Scitamineæ. Lindl. Zingiberacæ, the Monandria Monogynia of Linnæus. The Scitamineæ are closely allied to the Canneæ or Lindl. Marantacæ.

The Canneæ are destitute of aroma, but remarkable for the secretion of starch. The Scitamineæ are chiefly reed looking herbaceous plants, with large leaves and showy flowers. The roots of most of these possess aromatic and tonic qualities, and are much used in medicine, as galangal (*alpinia galangal*), turmeric (*curcuma longa*), kempferia galanga, East India arrow-root (*curcuma augustifolia*), zedoary (*curcuma zedoria*), costus speciosus, and zingiber officinale, the ginger of commerce.

The cardamoms of commerce, recognised in the British Pharmacopœias and called true or officinal cardamoms, are the produce of the "Elettaria Cardamomum," a native of the hilly parts of Cochin China, Travancore, Malabar, Coorg, Munjerabad and Nugur.

Description—Rhizoma with numerous short roots, stems several, perennial, erect, 6 to 9 feet, enveloped in the sheaths of the leaves, leaves lanceolate, acuminate, nearly sessile, entire, pubescent above, silky beneath, 1 to 2 feet long. Sheaths slightly villous, racemes several, procumbent, flexuose, jointed, branched, 1 to 2 feet long. Flowers small, pale white, fragrant, alternate, short stalked, solitary at each point of the racemes. Fl. principally March, May. Calyx funnel shaped, 3 toothed, finely striated, limb double, exterior portion of 3 oblong concave nearly equal divisions, inner lip obovate, longer than the exterior divisions, curled at the margins, apex 3 lobed, marked in the centre with purple violet stripes. Anther of two distinct lobes, filament with two transverse

lobes at the base, emarginate and simple at the summit. Capsules oval, 3 celled and 3 valved with a central receptacle, varying in size, generally from about 4 to 7 lines long, 3 to 4 lines thick, and of a yellowish white color. They contain numerous wrinkled seeds, of a dark-brown color outside, and white within, easily reduced to powder, which form an aromatic pungent spice with a peculiar but agreeable taste.

On account of their cordial and stimulant properties they are employed in medicine—very generally to qualify other medicines. The natives of India chew the fruit with betel, and use it in decoction to check vomiting. In infusion they are given to allay coughs. They are also used in confectionery, although not to a great extent in Britain, but, in Asia they are a favorite condiment, and in the North of Germany, they are used in almost every household to flavour pastry.

The unripe capsules are a pleasant addition to chutnies. The seeds depend for their qualities on a peculiar pungent essential oil, about 4 per cent, called oil of cardamoms, which may be obtained from them by distillation, and when fresh, is colorless, but it loses its odour and taste, if kept too long. The seeds also contain fixed oil 10·4. Alcohol extracts from them 12·5 per cent, of an acrid burning resin and extractive matter: the lignin amounting to about 77 per cent. Other kinds of cardamoms occur in commerce, but none are equal to the true cardamom in commercial value. The different kinds of cardamom differ not only in strength, but in the character of their aroma. The plants producing them have much general similarity.*

The Coorgs relate that, in the olden times, the cardamom plant was seldom met with in their jungles. The seeds being very agreeable to the taste, the plant was much sought after.

In course of time people noticed that it only grew in places where the ground had been shaken by the fall of some large tree, or of a large branch thrown down by the force of the wind, especially when this had happened a short time previous to the falling of the annual showers in March and April.

In imitation of nature, during the months of February and March, they selected in these jungles the largest trees and felled them, previously cutting down all the smaller surrounding trees and brushwood that would otherwise have lessened the shock given to the ground.

*The cardamoms of Coorg, Java, and on the Eastern Coast of India, are of an inferior kind.

By these means the plants increased. The people gradually became to be more and more acquainted with their requirements ; and at the present day, this singular kind of jungle horticulture is carried on systematically. I propose here to describe the method of cultivation and preparation practised in Coorg. I believe the same system is carried out in Travancore and the other countries where the *Elettaria Cardamomum* is to be found. In Coorg the plant grows spontaneously only in certain of the ever-green forests called Malés, situated on the line of ghauts at an elevation of from 2500 to 5000 feet above the level of the sea.

Those Malés situated near the villages are called "Umalés" (from ùru a village); those far away near the Mallayalum country "Gadi Malés" (from gadi a boundary). The "Umalés" are for obvious reasons the most valued.

These ghauts extend from Kiggutnaad to Thavúnaad on the one side, and from Mercaranaad to Thavùnaad on the other side. The Nalknaad jungles are the best.

The plant grows to perfection in a light layer of vegetable mould, resting on decayed primary rock.

Elevation, moisture, and shade are essential to it. It luxuriates near to streams and in places often enveloped in mists and fogs. A little sunlight causes it to grow stout and bear good fruit.

It seems to enjoy the cool sea-breezes that constantly blow over many of these hills, and the dense forest shelters it from the violence of the monsoon winds. Forests with a slight slope and a northern or western aspect are the best. There is very little malaria in these forests, and during the working seasons they are particularly healthy. The forest scenery of the cardamom Malés is magnificent, and the grandeur of the views to be obtained from them surpasses ordinary description. The coolies generally employed in these jungles are Mallayalum people, Páléyas, Cooroobas, Yeravás, Kudiyás. Holeyás only, the lowest caste in Coörg, are not allowed to work in these forests, beyond carrying the crop home after it is picked and assisting in the drying of it. They themselves believe that all kinds of evil will attend a breach of this custom.

Note.—Coorg is divided into six "Talooks;" these talooks are sub-divided into "Naads."

For felling, strong, expert men are required. For picking the crop, women and boys will do ; but women seldom work in the cardamom jungles, though they are often to be met carrying food to their husbands from their naad homes. Coolies are provided with axes and knives, and are paid for felling at the rate of Rs. 5—7 per mensem, and in addition, they receive daily $1\frac{1}{2}$ seer of raw rice, curry-stuff, salt, oil, tobacco, betel leaf and chunam. For picking the crop, they are paid equally high wages, for, although the work is lighter, at that time the jungles abound with large leeches and venomous snakes.

To keep off the leeches, they smear their legs and feet with a mixture of lamp oil and the bruised seeds of the sumpagee tree, *Michelia Champaca*, Linn. I have also seen them effectually rub their legs with leaves of the tobacco plant.

For the cure of snake bites they have their own native remedies and charms.

“Thimmachah” is the god of the Malés. The Kudiya,* the only inhabitants of these forests are his priests. *The Coorgs will never fell a tree after two o'clock in the day, believing that the offended god would cause the tree to fall in a wrong direction, and that no plants would come up.

Nor will they commence any new work on a Sunday, reckoning it very unlucky to do so. Tuesdays and, strange to say, Fridays are lucky days with them. When making new plots in their jungles, after the large tree has been felled, they pick up some of the chips lying about the stump, place them on it, and walk quietly away. They believe that the pleased god then approaches and scatters the cardamom seed over the newly made garden.

The Coorgs have many signs, by which they are more or less influenced, when selecting sites for new gardens.

Many know the good jungles by tradition from their ancestors, who had a better knowledge of them than the present generation. For, in the days of the wars with Hyder and Tippoo, they often were obliged to fly for safety into the recesses of their Malés.

*The toddy drawers of the hills. They obtain the toddy from the “*Caryota Urens*,” (which is common in the Malés) which they take to the Coorgs' houses and exchange for paddy, &c.

They will in a doubtful jungle, in the month of February, here and there fell a few trees, and judge the following year of its capabilities as a cardamom jungle by the presence or absence of young cardamom plants near to the felled trees.

The *Wottee is the only species of bamboo that grows in cardamom jungles. If Wottees, of which there are two kinds, the "Nool Wottee" and the "Kul Wottee," grow luxuriantly in a jungle, it is considered a good sign.

Wottees above all prefer moisture. There are certain plants which are especially to be found in cardamom jungles. The "Chikka Yelé," a plant which resembles, when young, the cardamom very much; the "Durbe-kole," a tall handsome tree with masses of long drooping leaves; the Poon (*Calophyllum* [*elatum*]); Ebony (*Diospyros* [*ebenam*]); the Dupada (*Vateria Indica*); and several other resiniferous trees. The wild nutmeg and the wild pepper.

There is a plant rarely seen except in good cardamom forests called the "† Angaree". The leaf of which, if touched, gives a severe sting, and the pain lasts for several days accompanied by pains in the armpits and chest. The best remedy is to rub chunam at once into the affected part.

Some time in the month of February (say 1866) or March, the felling party, (say ten men) 5 provided with axes and 5 with large knives, under charge of some intelligent man, if a Coorg, called Yéjamána, take the necessary supplies and start for the jungle. They begin by building near to some stream a temporary hut to shelter them at night. The next morning, the Yejamàna, who is well acquainted with the jungle, and has previously chosen the sites for the new gardens, points out to the coolies the trees to be felled. Half the party commence to cut down the surrounding small trees and brushwood, the others to fell the large trees.

Should any tree not fall heavily enough to shake the ground well, another tree is felled across it.

On an average, in one day the party of ten will make 5 gardens. Care is taken to leave about 20 to 30 yards of jungle between each garden,

* Coorg Wottee, Eng. hollow.

† Angaree, Can.; Nettle, Eng. (*Laportea orenulata*)

as well as not to make too many gardens in one year, lest there should be too great and sudden a decrease of moisture which would be injurious.

Generally from 50 to 100 gardens are made annually, until the whole jungle is under cultivation. If represented in a plan, a cardamom jungle would not be unlike a checkered board.

The young plants shoot up during the early rains of the monsoon on all sides of the clearing, but especially near to the roots and stem of the fallen tree. By October they will have grown 3 to 4 inches, and be one foot in height with 8 to 10 leaves by the ensuing February 1867.

By February 1868 they will be 2 feet, and by February 1869, 4 feet in height. In October 1869 they will give a light crop called by the Coorgs “*Dévakottu” (God’s fruit).

At this time each rhizome will have thrown up about 8 stems.

After the plants have grown to the height of two feet, the gardens must be annually weeded; at first, but slightly. When they have reached the height of 4 feet, a little culling will be requisite. For each plant must have six feet of clear ground left around it. Care must be taken in selecting what plants shall remain, and what be removed as superfluous.

† In October 1870, the plants will give a good crop, and will probably continue giving good crops until 1877, when they will begin to look sickly. It will then be necessary in February 1878 to select some large ‡ trees from the surrounding jungle, and fell them right across the sickly plots. Young plants will spring up and many of the old plants will have their stems and racemes§ killed by the fall, but from their rhizomes fresh stems will shoot, and the plants will bear with increased vigor for 8 years, when the same process of renovation will have to be gone through again. The year in which the trees are felled across the sickly plots and the ensuing year, but light crops will be obtained. According to the quality of the soil, the gardens will come into bearing sooner or later, and if carefully worked, a cardamom jungle never becomes exhausted.

* The first fruit of the plantain is similarly called Déva-Goné, God’s bunch.

† The crop in the Gadi Malés ripens about the 1st of September, and as showers at this time are prevalent, much trouble is experienced in drying the crop. In the Umalés picking seldom commences before the 1st of October.

‡ This work is sometimes performed in the months of October and November.

§ Racemes begin to shew in October and November and are of a good length by the ensuing February.

One rhizome will often have over 20 stems. Every seven or 8 years, the old stems die, but are re-placed by fresh ones.

The fruit is occasionally borne on the upper part of the stem, but this is very rare.

When from one stem four racemes are thrown out, it is called Nijaphala (true crop,) or Pooraphala (full crop); if 3 only, Múkkálaphala $\frac{3}{4}$ crop; if two, Ardhaphala, half crop; if one only, Kalúphala $\frac{1}{4}$ crop. One raceme will have from 8 to 14 branches, and each branch from 3 to 6 pedicels. When the crop is good, the branches are close together; when bad, the racemes are long, and the branches far apart.

In the month of September or October, the cardamom gatherers start for the Malés. A well thatched hut is constructed, for rain may be expected. On each side of the hut, are their bunks, and in the centre a large pit is made, about 4 feet square, and 3 feet in depth, (to contain 4 or 5 butties.)* The sides are covered with leaves, and around the top, stones are put to prevent dirt from falling in. This pit is to receive the cardamoms, when picked off the racemes. It is necessary to send people to the jungle before the crop is ripe, to watch and guard against it being stolen. The crop is also gathered before fully ripe, otherwise it will be eaten up by snakes and frogs, and the capsules, if ripe, split, when undergoing the process of drying. The workmen are formed into two parties, one goes in front with large knives to clear the gardens of weeds and young trees, (the latter must be cut close to the ground) and the plants of dead stems.

After them come the gatherers, who break off the racemes close to the stems of the plant. There is a tree common in these jungles called the "Netti Mara," its leaves are very large; these intertwined form a basket called Kotakari, about $2\frac{1}{2}$ feet long, 2 feet broad, like a small Góraga in shape. Each gatherer has one of these, into it he puts the racemes he has collected. When they reach home with their loads, they place them down near the pit, and after having refreshed themselves with a good substantial meal, commence to pick the capsules from the branches. This work often keeps them up late at night.

* A Butty is a measure, which contains 80 seers or 40 Hanès.

† Goraga is a covering, worn during the monsoon by coolies to keep off the rain, and formed so that it permits of their working freely under it. It is made of rushes interwoven.

The next morning the cardamoms are measured, put into bags, and sent to the drying ground. On arrival, they are again measured by the Yéjamana in charge of the drying ground. Most people dry their cardamoms at their naad homes, but some jungles are so far away that the owners prefer drying the cardamoms on the spot. For drying a crop of eighty butties of cardamoms, about 8 men are required. Near to the drying ground, there must always be some kind of shed or house, into which the cardamoms can be removed, should rain threaten. Cardamoms are dried by exposure to the rays of the sun. They are spread out thinly on large bamboo or date mats. Those nearly dry are never allowed to get mixed with those still green. Four days' strong sun is quite sufficient, and great care must be taken not to leave them too long in the sun, else the capsules will burst. Should rain come on, they have to be dried by the smoke of wood fires.

This turns them a dark color, and lessens their value. Cardamoms dried in the sun become of a yellowish white color. The Cóorgs all endeavour to get the work finished before the 5th November, as their great * Huttari feast commences about that time.

I tied up a few racemes with branches and capsules attached in a room with a good draft of wind. The result was very satisfactory. The cardamoms took longer to dry than if they had been exposed to the sun, but there was no perceptible difference between them and the best sun-dried ones.

After they are dried, the fruit stalks have to be removed.

Two men sit down on the ground opposite to one another, and place their legs so as to form a kind of hollow between them, into which a small strong round bamboo basket slightly hollowed is fitted. This is called a "Yella Mankari." † Into this another man feeds in the capsules. The two men seated on the ground rub the capsules with their open hands against the basket, and by this process they are freed of their stalks. This work is very trying, and unless the coolies wear a veil over their faces, the dust, which is very pungent, makes them ill. Nor can it be performed in rainy weather, as the capsules absorb moisture very freely, and if they were subjected to this process when damp would be

* Huttari, from Poodi-ari, feast of the first fruits of the rice plant.

† Canarese Mankari; English basket.

spoilt. After this women carefully separate the refuse and the empty capsules, called jallu, from the seeds* and capsules ; and the seeds from the entire capsules, by hand winnowing.

The different qualities of capsules should also be separated from one another, by which the crop is rendered more valuable than when the good and bad remain mixed together. The thorough cleansing and preparing of the capsules is of the greatest importance to the cultivator. They are then put into baskets and kept in a dry room, to which the wind has but little access. This is done to preserve their aroma. Cardamoms lose in weight and shrivel in bulk by keeping, therefore the sooner they are disposed of, the greater will be the return (supposing there be no rise in price). They are purchased by the cardamom sowcars, who with their agents traverse the naads at this time of the year. They are sold per maund weight, the sowcars taking delivery at the seller's house. The Coorg seer is $27\frac{1}{2}$ Rs. weight ; there are 40 seers to the maund, and twenty maunds to the candy, which is equivalent to 550 lbs. When speaking of cardamoms, if the word maund is used, the allusion is generally to dry cardamoms ; if the word butty is made use of, the reference is to green cardamoms.

Rain is essential to the cardamom plants. A heavy monsoon is good for them, but they derive particular benefit from the partial showers that fall in January, especially when followed by others in March or April. The old people say, that in former years the rain-fall was very much heavier. But in those days they were not so well off as now, and were often obliged to be out in all weathers, which may somewhat account for this statement on their part. However, there is no doubt that during the last 4 or 5 years, the country has been visited by unusual droughts.

Nor do I think that any plant that requires much moisture, the coffee plant, for example, has now a days as good a chance of thriving in the open in Coorg, as it had some six years ago.

Owing to the losses they have in many ways sustained of late, and which they attribute to the excessive clearing of forests, the Coorgs are most anxious at present to see their conservation thoroughly carried out. This feeling should not however be too much trusted to, for any

* Seeds are sold by weight. When freed of their pods they soon lose their aroma, and are consequently not so much valued as entire capsules.

great rise in the value of land would, I am afraid, be found too great a temptation by many of them. This year there is every sign of a good crop. There is a tree called the Koomiti, and the Coorgs say that when it bears a good crop of fruit, the cardamom plant will do the same. This year* the Koomiti tree is bearing heavily. Before the cardamom fruit is ripe, a small grub sometimes eats into it. Should the capsule be in the slightest injured, the seeds will rot. After it is ripe, snakes of the "Mandala" species feed on the capsules. They ensconce themselves at the foot of the plant, and often bite the coolies who are gathering the crops. They are killed in numbers every year during the picking season. Frogs and squirrels also eat the fruit, and porcupines the stems. When elephants visit these jungles, they do considerable damage, but with the advance of civilization, the number of these animals has decreased, and their visits to the Malés are very rare. The "†Kambala hula" is very common in these jungles, its sting is very painful.

I have estimated that a garden, 484 square yards in area, will, on an average, give annually 40 seers of green cardamoms, *i. e.*, 10 seers weight of dry cardamoms. One seer ‡ measure of green cardamoms yields one quarter seer weight of dry cardamoms. Allowing that four such gardens could be made in every acre of jungle, we would thus have the yield of one acre to be 40 seers of dry cardamoms, valued at Rs. 65 in Coorg, and Rs. 130 in the English market.||

According to the present system of cultivation in a well worked jungle, some gardens should be in full bearing, some only giving $\frac{3}{4}$ crop, some only $\frac{1}{2}$ crop, and some undergoing renovation. In the olden times, the Coorgs sold or bartered away their cardamoms to sowcars without any interference on the part of their rulers. But when the amount annually collected became sufficient to attract the attention of the rajas, they ordered the Coorgs to deliver their cardamoms to them. The Coorgs in return received from 20 to 30 Rs. per maund, according to the quality of the cardamoms delivered. The jungles were also distributed on "§ Jamma" tenure amongst those Coorgs who resided near to the

*A very good crop of cardamom has since been gathered.

† Can. "Kambala hula," blanket caterpillar. Its body is thickly covered with long hairs.

‡ Thirty two seer measures of good cardamoms, will weigh one maund, (1,100 Rs.)

|| The cardamom crop of 1867 was sold by the Coorgs to the local sowcars for Rs. 65 a maund, and by the latter to the foreign merchants at the rate of 75 Rs. a maund. This year (1868) higher prices were obtained.

§ Coorg, Jamma; Eng. own, belonging to, private.

Malés. The rajas considered that those who lived in the inner naads derived sufficient profits from their paddy fields. The cardamoms were picked and dried by the Coorgs, and then taken by them either to Mercara, Nalknaad or one of the rajas' "Punias" (farms), where they were weighed by the officials. At Nalknaad a large store was built. The cardamoms were sorted into three kinds. Tellicherry merchants seem to have been the principal purchasers in the days of the rajas, to whom they brought horses, cloths, and any other articles they desired. For the protection of the cardamom forests, 2 Darogas on 6 Rs. pay per mensem, 2 Shánbhógs on 4 Rs., and one Gottegar to each Malé on 3 Rs. pay, were entertained. Many Coorgs who were carried away by Hyder and Tippoo, died in captivity; their Malés fell to the rajas; and when any of the Mélénaad (highland) Coorgs offended them, they and their families were sent to the Kiggutnaad or lowland; their paddy fields and houses were given to other Coorgs, but their cardamom jungles were retained by the rajas, who worked them by the agency of the ryots, the latter receiving 3 Rs. pay per mensem. To this day, any jungles that are not bought at the auction sales are worked by the ryots for Government. They simply collect the crop and do nothing towards their improvement.

When Coorg was taken by the British Forces, a large quantity of cardamoms were found in the store at Nalknaad. These were sold to a Parsee sowcar, Dhara Sait by name. For several years afterwards, matters went on as in the raja's day, the Coorgs delivering their cardamoms to the sircar. After this, it would appear that the Government put up most of the jungles to auction, the lease being for 10 years. Some few Coorgs only were allowed to retain their jungles on Jamma. One of these leases expired in 1866. The jungles were then rented out for one year. The tenants picked the crop and neglected to bestow the slightest care on the gardens.

What would be the result of these short leases was pointed out by me in one of my reports to Government. I recommended that a lease for 20 or 30 years should be given, and that the wisest course of all would be, to give out the jungles on Jamma to the Coorgs.

The cardamom crop of the year 1867 realised very high prices. This, and the Commissioner's notification that the jungles would be again

rented out on a ten years' lease, caused the bidding to go up very high at the auction held on the 13th March 1868.

Jungles that were rented the previous year for 12,000 Rs. were rented out for the next ten years for 3,00,000 Rs. I believe that over 8,00,000 Rs. would have been offered, had the lease been for 20 years.

As it is, the tenants, mostly Coorgs, will have to make many new gardens to enable them to pay off the high rents. It will be several years before these new gardens will bear well. They will require renovation a few years after the expiration of the ten years' lease, and unless some new system has been adopted, the old one of felling trees will have to be resorted to. It is much to be feared that many of the jungles will have been so over-worked as to no longer permit of this. This year the sale was held on the 13th March, and many of the purchasers were unable to work up their jungles, owing to the rains being too near at hand; for the new gardens must be made several days before the showers come. There is therefore still an opportunity for Government to remedy matters by lengthening the lease—a measure that I am sure would be acceptable to all concerned. One will be apt to argue that, in the "Company's days" the ten years' lease was productive of no harm. But then the jungles were rented for moderate sums. Those to be given by the tenants this year are so large that they must only think of making their jungles pay quickly; whether they will be injured or not is no longer a matter of any importance to them.

In former days it was; a tenant generally looked forward to again securing his jungle at the ensuing auction.

To accomplish this, he, by many means, would endeavour to hide from others the knowledge of its bearing capabilities, and it was not uncommon for a cultivator to sell his crop to different sowcars, and they even were bound to secrecy as to the amount they had purchased. Owing to the new Forest Rules, the tenants have been afraid to fell "Government priced trees" in their jungles. Many complaints were made to me personally on the subject. They should be given to understand that any tree may be felled in order to make a garden or to renovate one; but that the cutting of any tree without permission for any other purpose is strictly prohibited. They should also, I think, be

entitled to any honey and wax that they may find in their jungles. The amount is very small, and the concession would please them. Trespassers should be severely punished. I would beg strongly to recommend that no more cardamom jungles be given away for coffee or any other cultivation. The felling of any jungle in the immediate vicinity of our cardamom jungles should, if possible, be strictly prohibited.

The general condition of the cardamom jungles, the source of so great a proportion of the forest revenue, should, I think, be annually reported on by the Assistant Conservator; as it is, the Assistant Conservator has to traverse these jungles; and whilst doing so, could with little trouble and to great advantage, also devote his attention to the cardamom forests.

Some years previous to the expiration of the last ten years' lease of the Government cardamom jungles, land in Coorg was much sought after for coffee cultivation. Europeans had an idea that cardamoms would only grow spontaneously in jungles with a great depth of good soil, and that consequently cardamom jungles were the best for coffee cultivation. The European planter would talk of his jungle "being a cardamom jungle," simply with a desire to intimate that it was particularly adapted for coffee cultivation. That there was any profit to be derived from the cardamoms was never thought of.

The cardamom jungles had been rented to the Coorgs, and before the planters could obtain them from Government for coffee cultivation, the Coorgs' rights had to be bought. Much bargaining ensued. The Europeans were eager to purchase, and the natives fully aware of this. Some planters, with the aid of a few judicious presents, obtained their jungles for small sums; others had to pay high prices. I have known money and equivalents to the amount of eight thousand rupees to be given for a jungle with only two years of unexpired lease.

Most of the jungles thus purchased and taken up for coffee cultivation have been felled, and the result has been a great decrease in the annual amount of cardamoms produced in Coorg, and a proportionate rise in the value of this spice.

That in Coorg the prices did not rise at once was, I think, owing to the merchants in other countries having a surplus of stock on hand; as

well as the increased value of the cardamoms being kept a secret from the producers.

Many Europeans who had become the owners of cardamom jungles trusted entirely to being able to cultivate them with coffee or to sell them to other planters. Some succeeded in doing this. But unfortunately during the last few years from various causes, the prospects of the coffee planters have been very bad, and a good many found themselves at the time when acreage taxation was coming on in possession of large jungles containing a mass of neglected cardamom gardens. They could not afford to pay the tax due thereon, and were obliged to petition Government to accept their resignation of these jungles. This has been done, except in such cases where any large portion of the jungles had been destroyed.

Those who, foreseeing the advent of better times and the high value this spice would realise, carefully cultivated their cardamom gardens, are now reaping the benefits of their prudence. Previous to the cardamom jungles coming under the acreage tax, the enormous size of some of these forests was a matter of indifference to the proprietors.

But now the resignation of all portions unfit for cultivation has become of great importance to them. No doubt this will be permitted; for, those individuals who have kept up their lands in a state of cultivation, are entitled to greater consideration than those who have so neglected their lands as to render them valueless. Nor can it be the desire of Government to levy tax on lands unfit for any kind of cultivation. Most of these inferior jungles surround the catchment basins of streams, and as well afford shelter to the lowlands from the violence of the monsoon.

The Coorgs liken a cardamom jungle to a Treasury. Dr. Moegling, in his memoirs, writes "a cardamom jungle is a mine of wealth to its possessor." It is the interest of Government to encourage proprietors of cardamom jungles to continue the cultivation of cardamoms in lieu of attempting that of coffee.

Their true value is becoming to be more generally known, and even many of those who were so anxious to resign their neglected cardamom jungles to Government, now regret their injudicious haste.

During the past year, several good cardamom jungles, the property

of Government, were nominally applied for for coffee cultivation ; in reality, had they been granted away, the cultivation of cardamoms would have been continued.

The Coorgs dispose of their cardamoms to the local cardamom merchants, who principally reside in Veerajenderpett and Mercara. The produce of the jungles on the line of ghauts, between Kiggutnaad and Thavúnaad, some 50 candies per annum, is sent to Veerajenderpett. The* produce of the Thavúnaad jungles and of those jungles on the line of ghauts between Thavúnaad and Mercara, some 25 candies per annum, is sent to Mercara.

These sowcars do not own jungles, but confine themselves to advancing money to cultivators on their cardamom crops, or give them cloths, &c., on credit.

This they do through their agents who reside in the naads, receiving 12 to 25 per cent interest on their money. In such cases, the cardamoms are sold to the sowcars at the rates of the day.

The agents, by giving out advances, secure sale of crops to their employers, collect the cardamoms from their different constituents, and store them in their own houses. The cardamom sowcars are at the same time generally large purchasers of native coffee, but the latter work entails much more trouble and risk. Merchants always pay ready money for cardamoms that they purchase. The local sowcars dispose of their cardamoms to inland merchants, as well as to merchants who come from the coast, from Mangalore, Tellicherry, and Cannanore. The latter are generally Memandara people, Moplahs, Guzerattis, and Parsees. They buy up all kinds, both good and bad mixed together. Consequently they do not give very high prices. They ship the cardamoms to Bombay, where they are much used in the preparation of sweet-meats, &c. The inland merchants are a caste of "Sivácháras" called "Havéry Sowcars." These merchants, principally residents of the Bellary District, come with their attendants on horses to Coorg in the months of October, November and December, after crop, and purchase the cardamoms from the petta sowcars. They only purchase the best kinds, and pay very high prices for them. They dispose of them again

*In the raja's days, the average amount produced was 112 Tellicherry candies valued at 800—1,000 Rs. per candy. The Tellicherry candy is 640 lbs. Vide Lieut. Connor's Memoirs. 112 Tellicherry candies are equivalent to over 180 Coorg candies.

to rich Mahomedans in the Hyderabad country, who use them at marriage and other festivals in pillaus, curries, sweet-meats, and consider them a very great delicacy.

These merchants annually take away some 10 to 15 candies. They remove them in cloth bags on pack horses. A horse will carry 4 maunds. A European merchant settled in Mercara was anxious to buy up cardamoms a few years ago, but as he did not send out agents until after crop time, he succeeded in securing but a very small amount. Large profits could be made by any merchant, who would regularly enter into the business of buying cardamoms. He would require to establish stores of cloth and other necessities in the naads under the charge of respectable native agents, whom he could hold responsible for what advances they made. There are also a few Europeans on the Sumpajee Ghaut, who cultivate cardamoms, and ship them direct to England.

I am indebted to a friend for the following information regarding cardamoms :—

“The indications of good seed are—a difficulty of being broken, a plump appearance, a bright yellow color, and a penetrating odour, with an acrid, and somewhat bitter, though not very unpleasant, taste. Before packing them for sale, great care should be taken that they are perfectly dry. It is considered that they are best preserved in a body. They are therefore usually packed in large chests, well jointed and pitched at the seams, and otherwise secured against the admission of any external moisture, as the least damp very much lessens their value.”

“Cardamoms come to our market*, chiefly from the Travancore states, with a small portion from the Cochin hills. That grown in Wynaad very seldom finds its way to our market. When we say that there is scarcely ever any stock on hand, you will understand that purchases are made for immediate shipment.

| | Maunds. |
|--|---------|
| Quantity brought for sale at Calicut | 1,100 |
| Ditto exported from Madras.— | |
| January to November 1867 | 708 |
| 1866 | 988 |
| 1865 | 1884 |
| 1864 | 1832 |

"Cardamoms are gradually becoming scarcer as the land is cleared, and consequently dearer. Prices in the country have more than trebled themselves in the last 3 years. Present quotations are Rs. 88 to 100 per maund, at Cochin and Calicut."

Exported to England, Red Sea, Persian Gulf.

Cost of curing. Vide the following:—

| | | |
|--|----------------------------------|------------|
| Bought | 3000 lbs. at, say 3 Rs. | 9,000—0—0 |
| Loss in dryage, &c., } say, <u>5</u> per cent | 150 | |
| | 2,850 | |
| | 427½ is inferior, say Rs. 40 | |
| | per maund | 611—4—0 |
| | leaving 2,422½ lbs., costing Rs. | 8,388 12 0 |
| Shipping charges | Rs. 4 8 0 | |
| Cases. | " 18 0 0 | |
| Curing charges. | " 14 0 0 | |
| Export duty, 3 per cent Tariff value, | | |
| | Rs. 200 per cwt. ,, 120 0 0 | 366 3 6 |
| Commission on Rs. 8,388—12—0 at 2½ per cent. | | 209 11 6 |
| Cost of 2422½ lbs. | Total Rs. | 8,754 15 6 |

"Price realized at home 5/ to 7/6 per lb. Home charges averaged about 5d per lb.; last quotation, 5/6 at 7/6. Cardamoms are sorted according to size and color, but unlike coffee and colonial produce generally, the small sized ones, provided they are plump, are considered the best. The large lanky ones form Class No. 2. Discolored empty ones (or nearly so) constitute triage. The quality of the seeds varies very much according to the locality of the plant. Cardamoms are usually distinguished by the places of their growth, and valued accordingly. At present it is not judicious to ship good cardamoms from the eastern coast, but no doubt when brands become known, the port of shipment will no longer be so much thought of. I would suggest packing cardamoms in tin cases, which might be fitted into seasoned wooden chests."

From this, it will be seen that cardamoms have risen in value, as the amount brought into the market for sale has decreased.

I am quite confident that the prices now ruling (if not higher ones) will always be obtained. It is only the rich who can afford to buy cardamoms, and it matters but little to them, whether they have to give 3 Rs.

or 1 rupee per seer weight, for a luxury and commodity they esteem so highly. No surer test could have been made of the popularity of the cardamom as a spice, than that which it has undergone of late years.

Many conjectures have been made with regard to the spontaneous growth of the cardamom plant. The spontaneous growth of many other plants is equally surprising and unaccountable. The "Beddiekéri Mara" (*Sponia Wightii*) or charcoal tree springs up in Coorg wherever a forest clearing has been made. More abundantly on clearings made in the bamboo districts than in those made in the ever-green forests. In Nugur, a district in many respects resembling Coorg, this tree is rarely to be found.

By analysis of the soil in which the cardamom plant grows, of the plant in its healthy state and in its sickly state, we might arrive at some conclusion as to the influences that limit its range of habitat.

The cardamom plant can be easily grown from seed, it also admits of transplantation, but will not last long, except in a congenial soil.

One fact that struck me particularly was the total absence of young plants in any old cardamom plots, notwithstanding the great number of seeds that must fall on them annually.

My opinion regarding the spontaneous growth of the plant, is, that the soil of all cardamom jungles contains the seed in abundance. By felling a tree, when making a new plot, we admit the sun, and the ground is well shaken, which opens it up to the action of the air. By the slight admission of sun-light the temperature is raised to the point at which the seed will germinate. The cutting and drying of the brushwood, which probably draws from the soil those nutritive particles that the plant requires, gives it a fairer chance of flourishing. After 7 years, the plants would appear to have exhausted the soil. The felling of a large tree across the plot smashes up the plants, and prevents them bearing that year. Thus they have a year of rest. The tree that for years has been drawing from the soil probably the very particles the cardamom plant requires decomposes, and returns them again to the soil and the surrounding plants, which causes them to flourish anew.

When this stock of manure is exhausted, a fresh stock must be given, or in other words another tree must be felled. Some attribute the growth of the plants, after the felling of large trees, to the fact of seeds having been previously deposited in the hollows of these trees by

birds. There is every reason to believe that snakes, squirrels, and frogs, facilitate the dispersion of the seed, but I do not think that birds eat the fruit at all.

Besides, if this theory were correct, decayed trees as containing most hollows would be the best ones to fell; whereas the soundest trees are invariably chosen.

There are many great advantages in being a cardamom cultivator. He has none of the difficulties to contend against that those meet with who endeavour to make land bear crops other than those it naturally produces. And as the whole system of cultivation is a close imitation of the proceedings of nature, it is but reasonable to expect (and experience tends to confirm this) that the profits will be lasting. In no season is there a complete failure of crops, as is often the case with acclimatised plants, and the Coorgs assert that the seasons in 7 years out of ten, are good. Nor is there any danger to be apprehended from fires, as is the case with coffee estates in the open. To ensure the protection of the crop, precautions similar to those adopted by the Coorgs must be taken. In fact, I would recommend all European cultivators to secure the services of some intelligent Coorg experienced in this line of work. He would supervise the collection of the crop, as well as select the trees to be felled in the jungle, give out advances to coolies, and, during the remainder of the year, would exercise a general supervision over the jungle. The proprietor should be on the spot at harvest time.

After the original outlay of capital incurred in the purchase of a jungle, the expenses are but small, viz:—

1stly. The cost of making each garden is one rupee, which, taking 4 gardens to the acre, is at the rate of 4 Rs. per acre.

2ndly. The annual rent. This varies according to the term on which the land was obtained from Government, but under no circumstances can it exceed two rupees per acre.

3rdly. An annual present to the Coorg who supervises during the absence of the proprietor.

4thly. The cost of collecting and preparing the crop, and of weeding the gardens. This can be put down at 200 Rs. for picking

and drying a crop of sixty butties, as well as thoroughly weeding the gardens.

5thly. Cost of axes, knives, mamaties, cloth-bags, bamboo-mats and baskets.

To this may be added the cost of erecting a small hut or cottage with a terrace in front for drying the crop.

The Coorgs often offer to take the crop of jungles owned by Europeans on contract for a given sum. This should never be done for less than a term of 20 years, otherwise the contractor is sure not to weed the gardens properly. The cultivation of the cardamom plant, like all other plants in their original state, must be capable of development, and I have no doubt that, if whilst attempting this, strict care be taken to introduce only such variations as are in keeping with the character and habits of the plant that it will be rendered more prolific. Attention might be paid to the application of drainage to the cardamom plots; the removal of noxious substances from the soil and the admission of fresh air to the roots of plants, always has a beneficial effect on them.

Irrigation under shade, where feasible, would, I believe, be of great advantage to the plant, for, it luxuriates near to running water,* but no amount of water can make up for the absence of shade. I would also recommend the filling up of all vacant spaces in the cardamom plots. At present this is not done. This could be done either by transplanting seedlings, of which in some spots there is a superabundance, or by *propagation by tubers. The pits should be made after crop time, and the seedlings put in during the month of July, and tubers in the early rains in March and April. By continually felling trees, we are apt to exhaust the jungle. The application of manure would, I am convinced, be most beneficial, and perhaps enable us to dispense with this rude system of fertilizing the soil, which causes the loss of 2 or 3 years, evidently the time required for the wood to decompose sufficiently to be of service to the plants. The trees in ever-green forests are, as a rule, quick growing large trees, and like all such, decay soon when felled and exposed to alternate changes of moisture and heat. I would recommend digging annually to the depth of one foot at a distance of $1\frac{1}{2}$ feet to 2

*I first attempted propagation by tubers at Dr. Brandis' suggestion. I find it to be the quickest method.



feet all round the roots of the plants, and filling up such pits with fresh vegetable mould from the surrounding jungle.

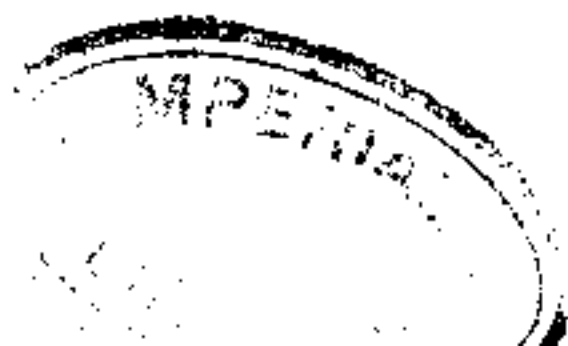
The rootlets would soon avail themselves of the proffered nourishment, and the invigorated plants bear prolifically. In plots where too much sun has been admitted, a few jungle trees should be allowed to grow up, those being selected that would yield a slight shade without injuring the plants. All such innovations should be adapted to meet the requirements of local circumstances. If pieces of metal, stamped with different numbers in Canarese character, were made, and one affixed to a prominent tree in each plot, it would facilitate the owner in supervising his workmen, and enable him to carry out the work in a systematic manner, as well as to more clearly understand any reports made to him whilst absent. That the large profits to be acquired from cardamom cultivation were perceived by so few Europeans, is not difficult to explain. It is only since the introduction of coffee into Coorg, which was the cause of the destruction of so many cardamom jungles, that this spice has become of so great a value. A few years ago every body thought of coffee and of coffee only.

Of late years, many would have liked to have turned their attention to the cultivation of other produce—for example, paddy and cardamoms; but were mostly too much involved in coffee cultivation, and the very failure of coffee cultivation* has given additional value to cardamom jungles and paddy lands.

The climate of Coorg is particularly favorable to the growth of Orchidaceous plants, and I can see no reason why the cultivation of the Vanilla plant (*Vanilla-planifolia*) (*Vanilla-claviculata*) should not succeed in the cardamom forests.

(Signed) E. LUDLOW,
Assistant Forest Conservator of Coorg.

* In 1868, when this Memo. was written, much loss had been occasioned by the coffee borer.





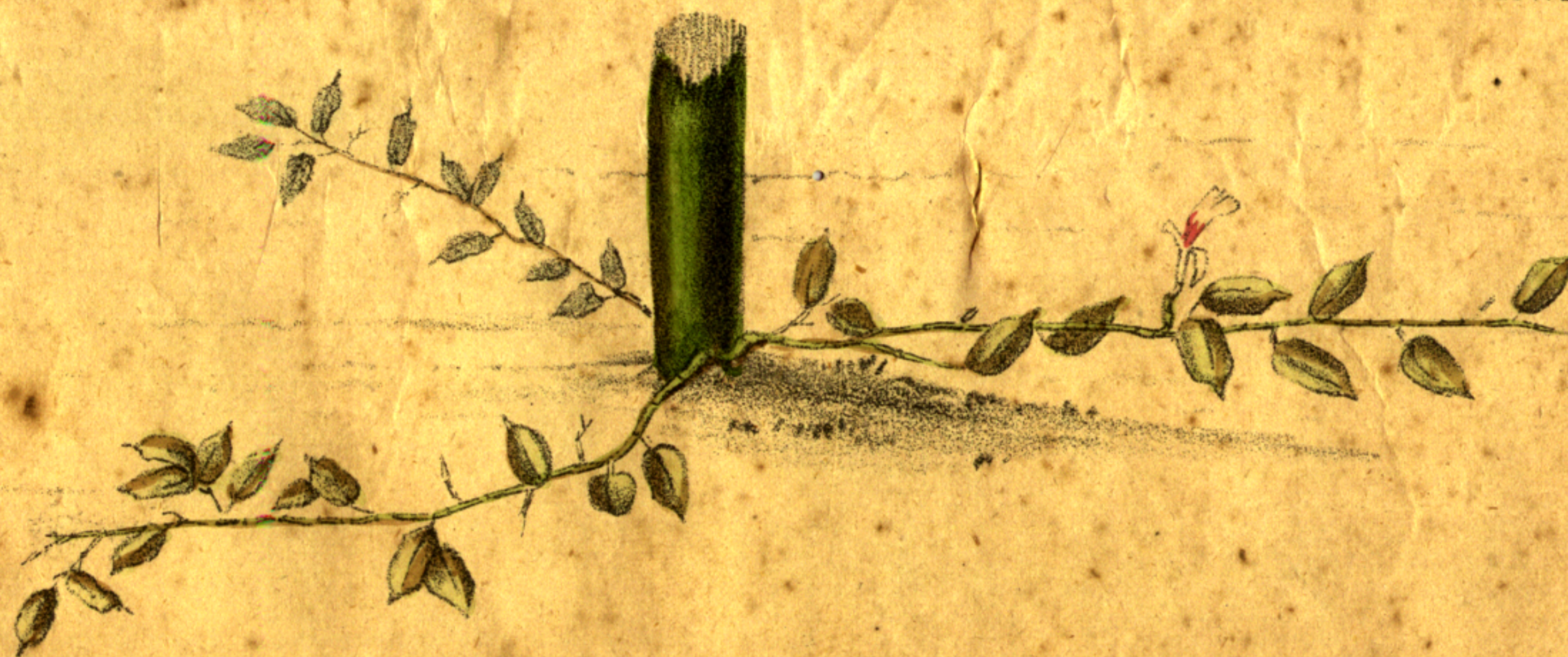
CARDAMOM PLANT.



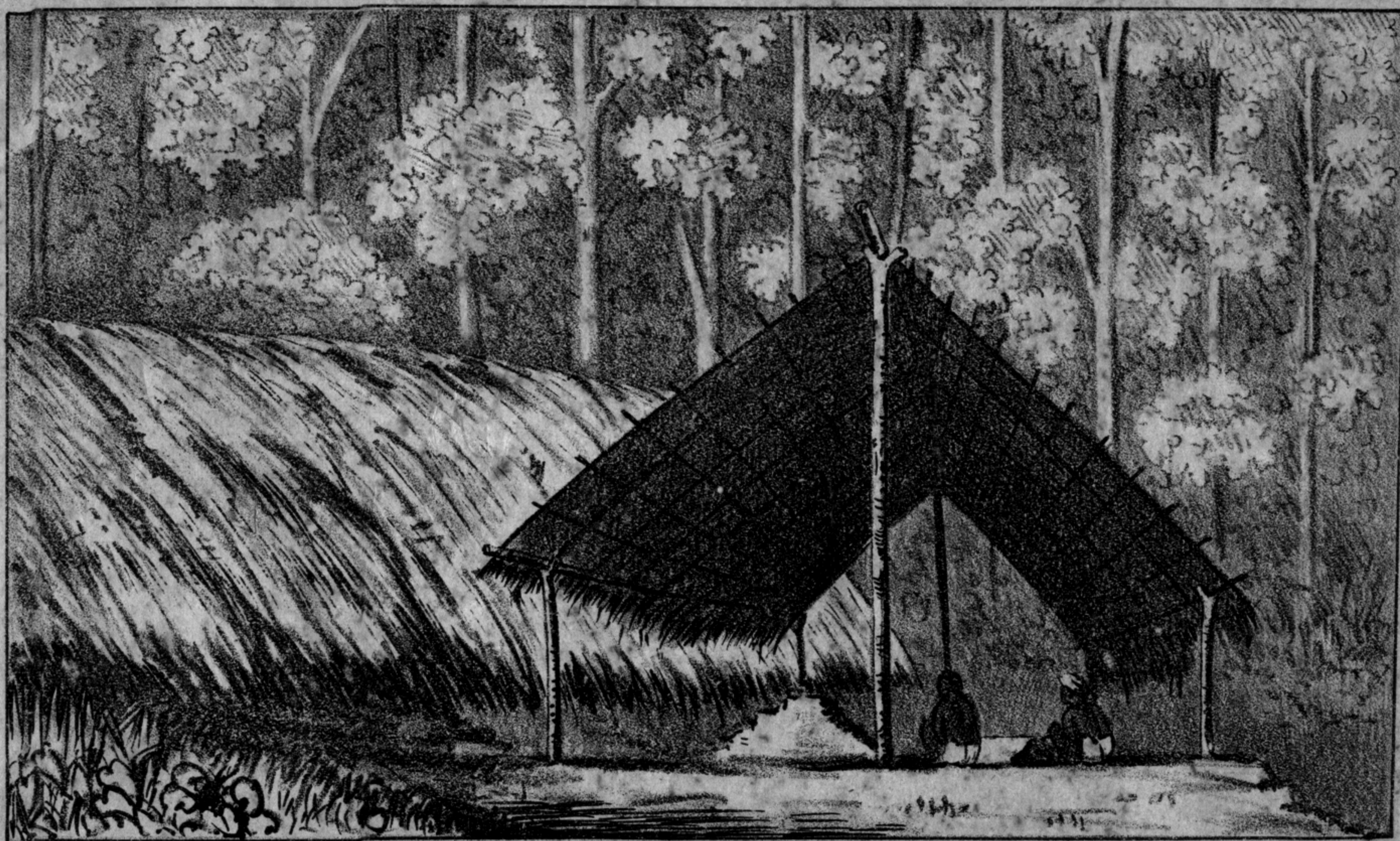
CARDAMOM SEEDLING



CARDAMOM FLOWER.



SINGLE STEM OF CARDAMOM PLANT WITH RACEMES.



HUT IN A GARDAMOM FOREST.