FLORA.

In Coorg, extensive forests clothe every mountain range almost up to the summit, and bamboo jungles cover the more level eastern districts, interspersed with such trees as are peculiar to these localities. The flora of the country is almost identical with that of the rest of the mountain regions of Southern India.*

Looking upon Coorg with the eye of the forester rather than that of the general botanist, the most superficial survey will not fail to discover invaluable treasures of timber trees and their produce, scattered all over the Province. Small as the country is, there are nevertheless distinct tracts with trees peculiar to them. The two prominent zones are by the Coorgs called *Male-kádu* or mountain-forests, and *Kanive-kádu* or forests on the lower hill ranges and passes. Botanically they may perhaps be determined as evergreen and deciduous forests, the former clothing the Ghats, the latter the eastern hill-tracts.

Male kádu.—All along the slopes of the Ghats, the poon spar (*calophyllum angustifolium*) rules as king of the forest. When full grown, it is often upwards of 100 feet in height; its wood is clean, tough and elastic, and there is perhaps no other tree so well suited in every respect for supplying ships' spars and masts. By its side may be seen the black dammer tree or dúpa-mara (*canarium strictum*), which attains a great height, and may be recognized at a distance by the peculiar red colour of its foliage. The resin obtained from this tree has a brilliant black lustre when adhering to the ash-coloured bark, but when held up to the light it is of a rich brownish-yellow tint. Large lumps of it are found by digging around the roots of the tree.

Another resin-producing tree is the white dammer tree (*vateria indica*). When an incision is made into the bark of this tree, and fire applied to it, the charred trunk yields an increased quantity of the fluid resin. The *calophyllum inophyllum* or Alexandrian laurel also supplies a

* The first collection of Coorg plants appears to have been made by Captains Munroe and Gough, who probably placed their collections at the disposal of the famous botanist Dr. Wight. Mr. Metz, a German Missionary on the Nilagiris, also collected a good many plants about Mercara, which were afterwards distributed in Germany by Hohenacker and named by Miquel. In Major Heber Drury's book on *Useful Plants*, and Dr. Bidie's *Timber Trees of India* much information is given about the principal timber trees in Coorg.

fragrant resin, and from the seeds is extracted by pressure the Pinnay oil of commerce.

The beautiful order *gultifera* is also frequently represented by a least two species. The *garcinia pictoria* yields a very superior kind of gamboge, and the other species an inferior sort. The gamboge is obtained from the fruit of the tree by pressure and maceration. A very common tree of the dense forest is the wild cinnamon (*cinnamomum iners*), the bark of the branches of which is supposed to form part of the cassia bark of commerce

The following trees are noted for the excellence of their timber or other useful qualities: The sampige (*Michelia champaca*) with its beautiful and sweet scented flowers, the perfection of beauty in the poetical fancy of the Coorg bard; the ebony (*diospyros ebenaster*; Can. *kari-mara*); the wood-oil tree (*dipterocarpus lævis*), the kanagala tree (*dillenia pentagyna*); the jack tree (*artocarpus integrifolius*; Can. *halasina-mara*); the iron-wood tree (*mesua ferrea*), with large white fragrant flowers and very hard wood; the Indian mahogany or white cedar (*cedrela toona*; Can. *billandi-mara*); the red cedar or Chittágong wood (*chickrassia tabularis*), the timber of both trees is little inferior to mahogany; the wild nutmeg (*myristica*); the wild cashew-nut (*anacardium occidentale*; Can. *géru-mara*); the Indian gutta tree (*isonandra acuminata*), a large tree with beautiful foliage and oil-yielding nuts; the bastard sago (*caryota urens*; Can. *baini-mara*) from which an agreeable toddy is drawn, while from the pith, sago may be prepared; the hog-plum tree (*spondias mangifera*; Can. *ambatte-mara*); the wild clove tree (*eugenia*).

A most remarkable and truly majestic forest tree is the *lepurandra saccidora*, which deserves to be classed with Thomson's

> Lofty trees, to ancient song unknown,
> The noble sons of potent heat and floods
> Prone-rushing from the clouds.

It flowers in October, in very peculiar catkins something like a common mulberry. The fruit is in size and shape like a small fig, covered with a beautiful purple-coloured down. The Coorgs manufacture very curious sacks from the bark. A branch is cut corresponding to the length and diameter of the sack wanted. It is soaked a little, and then beaten with clubs until the liber separates from the wood. This done, the sack formed of the bark is turned inside out and pulled down close to the extremity, where the wood is cut off, leaving a thin piece to form the bottom of the sack. These sacks were formerly much used for carrying rice; some of them may be seen in the Mysore Musuem.

Very different in size, but of far greater importance than the sack tree, is the poison-nut tree, (*strychnos nux vomica*) which may be found near it. The wood of this tree is hard and durable, its leaves oval and glossy; the small greenish white flowers appear in February; the fruit is of the size of an orange, and in its white harmless pulp are embedded many round flat seeds, from which the powerful poison strychnine is obtained. On open sunny woodsides grow *lobelia nicotianifolia*, a stout annual plant, with showy white flowers in terminal racemes; and the brambles—*Rubus lasiocarpus* or country raspberry, *R. rugosus*, a scandent prickly shrub, and *R. wallichiana*, which yields a delicious fruit. The *conocephalus nivens* appears here in great abundance, and proves a troublesome weed on some coffee plantations. Its stem yields a beautiful fibre, much resembling that of the Rheea or China grass plant.

The forests in the Ghat region are so dense and tangled with thorny underwood and creepers, that they can be penetrated only by beaten paths, and under the guidance of one familiar with their formidable mazes. The many densely shaded mountain rills and torrents are generally lined with a great variety of ferns, prominent amongst which is the stately tree fern. In other places delicate reeds (*wotte*) stud the more humid banks of streams. Stout ratans, with terrible spines and slender *flagelli*, lashing the air to keep as it were intruders at a distance, climb in all directions and surmount with their feathery leaves the highest trees. Favoured by the constantly moist atmosphere, the stems of many of the trees are speckled with lichens, or covered with rare orchids, mosses, and other parasites, especially the *mandali* parasite, with its large glossy leaves irregularly cut on one half of the limb. Festoons of wild pepper and gigantic creepers, which again support the more slender herbaceous vines of *convolvulus*, *thunbergia*, *ipomœa*, &c., stretch from tree to tree in the most fantastic interlacings, and gorgeously decorate the grand timber trees verdant with their foliage and many-hued flowers.

The soil, almost everywhere covered with a humid rich stratum of vegetable mould, highly favours the growth of moisture-loving plants, such as the Indian arrowroot (*curcuma angustifolia*), the long-rooted turmeric (*curcuma longa*), the wild ginger (*gingiber cassumunar*), and especially the highly valued cardamom.

Wherever the hills are denuded of forest, they are clothed with a dense coarse grass, which at times greatly impedes their ascent. As the western forests are left and the eastern districts approached,

many of the trees just enumerated are still met with, but added thereto are others characteristic of a drier climate. On entering into the more open country, there are found upon the grassy glades (*bâne*) smaller trees and shrubs, disposed with an artless grace that the landscape gardener in vain seeks to imitate. Here spring and summer, in sweet embrace, hold perpetual sway, and the very air, so cool and fresh, seems imbued with life and health.

The aromatic jasmine, with its pure white flowers, the Coorg rose, in its rustic simplicity, the *gloriosa superba*, with its flaming corolla, the *melastoma malabaricum* with its strange looking ribbed leaves and splendid mauve coloured flowers, the Coorg lilac (*callicarpa wallichiana*) with its small red cymes of flowers, and the *adisia humilis*, with translucent rose-coloured flowers that look as if they had been cut out of a rare cornelian; these and many other flowering shrubs and herbs greet the eye here.

As we approach the Coorg houses, we come upon groves of orange, lime, guava (*psidium pyriferum*), rose apple (*jambosa vulgaris*), pomegranate, and clumps of plantain trees, all of which thrive remarkably well. The bastard sago is much esteemed for its toddy, and the areca palm occasionally keeps it company, and their foliage, blended with the dense crown of the stately mango or jack tree, forms a beautiful back ground to the large paddy-flats below.

Kanive kâdu.—We enter now upon the eastern or bamboo district of Coorg, called Kanave-kâdu. The character of this district is indicated by the prevalence of large clumps of bamboo, interspersed with blackwood, matti, hony, teak, sandal and other trees. Whoever was fortunate enough to see a Coorg bamboo jungle some years ago when in its full vigour of growth, cannot have failed to be struck with the elegance and beauty of its general appearance. Captain Basil Hall, who in 1813 entered Coorg from Mysore by way of Siddhapur and Virâjpet, thus vividly describes his first impression of a pure bamboo jungle. "It seemed as if I were travelling among the clustered columns of some enormous and enchanted Gothic cathedral. . . . The ground extended on all sides as smooth and flat and clear of underwood as if the whole had been paved with grave-stones. From this level surface rose on every hand, and as far as the eye could penetrate into the forest, immense symmetrical clusters of bamboo, varying in diameter at their base from 6 feet to 20 or 30, as I ascertained by actual measure-

ment. For about 8 or 10 feet from the ground each of these clusters or columns preserved a form nearly cylindrical, after which they began gradually to swell outwards, each bamboo assuming for itself a graceful curve and rising to the height some of 60, some of 80 and some even of 100 feet in the air, the extreme end being at times horizontal or even drooping gently over, like the tips of the feathers in the Prince of Wales' plume. These gorgeous clusters stood at a distance of 15 or 20 yards from one another, and being totally free from the interruption of brushwood, could be distinguished at a great distance—more than a mile certainly, in every direction—forming, under the influence of an active imagination, naves and transepts, aisles and choirs, such as none but a Gothic architect ever dared to conceive. . . ."

A view so grand would now, however, be sought for in vain, the whole of the Coorg bamboo jungles being in a state of decay after the periodical seeding during the last few years. This is a remarkable phenomenon, asserted by the natives to take place once every 50 or 60 years, though not everywhere at the same time. In the north-east of Coorg the general seeding took place in 1860, and in the south-west in 1866 and '67, so that there was hardly a green bamboo left in these jungles, but on the western slopes of the Ghats the bamboos are still alive and in vigorous health.

The Coorgs have the following Canarese proverb :—

Arvattu varushakke ondu katte,
Yeppattu varushakke ondu yette.

which may be translated as meaning :—

Once in 60 years the bamboos will decay,
Once in 70 years a famine may hold sway.

Lieutenant Connor in his *Coorg Survey* states it as a curious fact, that in 1817 in the whole of the district of Wynád there was scarcely a bamboo clump to be seen that was not dead, dying or in blossom. Clumps of all ages, growing contiguous to or far apart from each other, were in the same condition. The same thing happened again there, as well as in Coorg, during the last few years, which occurrence would prove conclusively, that the bamboos, growing from seed and multiplying their reeds from the roots like the grasses, live for a period of about 50 years, when the whole clump, with old and young reeds, produces flowers, and seeds and dies off the same year. From the seed a new progeny springs up, which grows very fast, but not, as has been supposed, to its whole length in one season. This is only true of such shoots as spring up

from the main clump after it has nearly reached maturity, which requires a growth of 12 years. These shoots, being armed at their extremity with a sharp smooth hornlike cone, and without any lateral branches, force their way through the intricate mass of the parent reeds and contribute to the density, stability and stateliness of the whole clump, which may contain from 50 to 200 reeds. The several reeds are from 5 to 8 inches in diameter, jointed at every 12 or 15 inches, and hollow between the joints, where thorny tripartite branches are alternately attached, of which the middle ones are strongest and make good walking sticks. The branches are repeatedly subdivided, and present with their delicate light-green foliage of linear lanceolate leaves, a most graceful feathery appearance. When in blossom the bamboo is leafless, and the extremities are covered with flowers in large compound panicles. The seed is in size and appearance like oats or small paddy. It is eaten by the poorer classes, but considered unwholesome. The birds and rats, however, revel in the feast of plenty. The water into which bamboo seed has largely fallen is said to be particularly noxious.

The cutting of bamboo is a difficult task that is rarely well done by any other than those expert jungle people, the Yeravas and Kurumbas. For the purpose of cutting a single reed, they manage to climb over the lower thorny mass to where the reeds branch out freely, about 10 or 15 feet above the ground, and cut them at that height. To level the whole clump, the Yerava has to cut the stem of each bamboo below and above his head, removing each piece from the thorny embrace of the rest; he thus boldly advances into the clump, and the further he progresses in his work the greater is the danger of the whole clump suddenly giving way at the slightest breeze and crushing the unfortunate intruder.

There are several kinds of bamboo, the one described is, however, the most common. The reeds of another kind are much smaller but solid, and are known by the name of male bamboos.

One of the handsomest trees in the eastern jungles is the blackwood (*dalbergia latifolia*) with a stem of 2 or 3 feet in diameter and 60 to 80 feet in height. It is one of the most valuable timber trees in India, and little, if at all, inferior to the South American rosewood, which it closely resembles in many particulars. Near neighbours of the blackwood are the *matti* and *hony*. The matti (*terminalia coriacea*) is remarkable for its excellent timber, and is easily recognized by its thick

ash-coloured bark, cracked into small tablets like the scales of a crocodile. Under the knotty swellings of the bark of the matti tree, small quantities of water are hidden, which the lynx-eyed Kuruba readily discovers in his jungle wanderings during the hot season, and from which providential fountains he draws a thirst-quenching draught. The hony or kino tree (*pterocarpus marsupium*) yields an excellent yellowish timber, fit for exposure; and a valuable brownish gum, the kino, which oozes out from the wounded stem. Chunam brought in contact with it turns bright yellow.

Teak (*tectonia grandis*) occupies a distinct girdle along the eastern boundary of Coorg, within the basin of the Lakshmantirtha, and in Nanjarájpatna and Yélusávirshime taluks; but, with the exception of the Amali-topu in Kiggatnád, the teak forests in Coorg are neither so dense nor so stately as those in Burmah, where trees of enormous size and height are found. The large and strongly nerved leaves, rough above, whitish and downy beneath, and the numerous white flowers in terminal bunches on the high and many branched trunk, mark the beauty and strength of the tree. Both for house and ship building teak is the best of woods, easily worked, and almost indestructible by climate or insects, owing to its oily nature. Coorg teak is of most excellent quality, oily, and free of heart-shake. It is a Government monopoly, and sold from wood-yards at the rate of 12 annas per cubic foot.

In close proximity to teak, and in an equally limited tract of dry and elevated slopes, grows the white sandal-wood (*santalum album*), scattered between other trees and on cultivated land. It is rather a small tree, of a more or less crooked stem, but its spreading branches, with tiny light-green leaves and yellow or purple coloured small flowers give it an elegant appearance and form a marked feature in the landscape. The wood is close-grained and hard, especially the *duramen* or heart-wood, which for these qualities and for its agreeable scent is highly prized, and employed for ornamental boxes, card cases, paper cutters, fans, walking sticks, &c., which are made chiefly in Nagar and North Canara. Sandal-wood is also a Government monopoly, and is collected at an expense of one eighth of the value of the wood. Trees when from 16 to 40 years old, according to the nature of the soil where grown, are cut down; the best yield a billet of 5 inches square and 4 or 5 feet long. The wood fetches at the public auctions periodically held by Government at the *kotis* or wood stores, from 70 to 98 rupees per candy

of 550 pounds avoirdupois, and is generally exported to Bombay. Natives distinguish three kinds, according to colour:—the red sandal (*sri ganda*) which is the most highly scented; the yellow sandal (*arasina ganda*); and the white sandal (*bili ganda*) which possesses but a faint aroma and is least prized. The chips are burnt as perfume, or reduced to powder, which enters into the composition for marking the foreheads of natives. The roots, containing the greatest amount of the essential oil, are chiefly used for its production. It is heavier than water and yields an excellent perfume. The sandal tree is propagated from seed, and forms suckers springing up from the roots.

A stately though not very valuable tree, all over these parts of the country, is the wild mango, which towers with its lofty crown far above its humbler neighbours. But the giant of these jungles is the *ajini* or *wild jack* (*artocarpus hirsuta*), the timber of which is most useful for house and ship building. The rosy-tinted smooth-barked *benteak* or nandi (*lagerstroemia parviflora*) is reputed for its excellent timber.

A splendid jungle tree, when in flower in February and March, is the red cotton tree (*bombax malabaricum*). Its flowers are large and of a deep red colour, and the many seeded capsules contain a silky cotton, which is employed for stuffing pillows and mattresses. The staple is so short as to render this so-called cotton commercially valueless. The wood is soft and spongy and of little value. Another red cotton tree, of smaller size and with a prickly trunk, is the *salmalia malabarica* (Can. *mullu yelava*). The dindul or *conocarpus latifolius* is a fine timber tree, and very frequent in the deciduous jungles. The heart-wood is of a chocolate colour and exceedingly durable. The Kurubas use it for axe-handles. When burning, it emits an intense and sustained heat, and is therefore highly prized for lime kilns and distilleries. The *heddemara* or *nauclea cordifolia* yields a beautiful close-grained wood resembling box; but it cannot withstand exposure to damp. Its small yellow flowers appear in November and December. The *rottlæria tinctoria* furnishes an orange dye—the *kapila ranga*. The soap-nut tree (*sapindus*) which is here rather common, produces a small fruit the pulp of which is saponaceous and used by the natives for washing. For marking their cotton cloths the pure black acrid juice of the shell of the marking-nut is used; it is the fruit of a tree about 50 feet high, the *semecarpas anacardium*. The native ink is chiefly manufactured

with the fruit or galls of the *alali-mara* and sulphate of iron. This tree, the *terminalia chebula*, yields excellent galls, produced by insects puncturing the tender leaves. The astringent nuts, bruised and mixed with molasses and chunam, produce a very strong mortar. They are also largely used for tannin purposes.

On the outskirts of bamboo jungles the Indian coral tree (*erythrina indica*) with its brilliant scarlet flowers, may be frequently found; its soft wood is much used for toys. On account of its prickly bark the branches make good fences, and where the betel vine is cultivated this tree offers an excellent support. In Java it is used as a shade tree on coffee plantations, but it has not yet found favour in Coorg for the same purpose. A very pretty tree, with spreading pinnate foliage and gooseberry-like seeds, is the *nelli-kai-mara* or *emblica officinalis*. The fruit though hard is welcome to many for its thirst assuaging properties. Sometimes it is preserved in sugar. The bastard teak (*butea frondosa*), though common, is a very beautiful tree when in flower. Its scarlet flowers dye cotton yellow, and from the bark, when cut, the gum *palas-kino* is obtained. A fragrant resin called *kundricum* is furnished by the gugula-mara (*boswellia glabra*), an erect tall tree covered with greenish ash-coloured bark.

On the table-land of Mercara, the *kakke-mara* or Indian laburnum (*cathartocarpus fistula*) is particularly conspicuous in April and May by its beautiful long pendulous racemes of yellow flowers. Its long cylindric legumes, of dark brown colour and nearly 2 feet in length, contain a mucilaginous pulp which is a valuable laxative when mixed with cassia. On the same plateau is found the American aloe (*agave americana*) with its high flower stem and long thick leaves, which might be turned into excellent fibre, but beyond a few experiments no manufacture is carried on. The plant serves for making fences only. It has been superseded, however, by the lantana shrub (*lantana aculeata*), which within a few years has spread over the whole of Coorg. Its square stem and branches are prickly, its ovate leaves when bruised have a strong smell of black currants, and its orange-coloured flowers are more or less in blossom throughout the year, and the shrub when kept within proper bounds makes an excellent fence. But this plant, whose vitality is most obstinate, threatens to overrun many a tract of land in Coorg and elsewhere that might be far more profitably occupied. On this account its extermination has become imperative. The recoguized necessity of shad-

ing exposed coffee plantations has brought to notice a tree chiefly distinguished for its quick growth and shady crown—the charcoal tree (*sponea wightii*). It springs up spontaneously on every new clearing after the burn, and mostly so in the eastern districts. Its wood produces a fine charcoal and its bark an excellent fibre. The tree has, however, not secured the planters' favour, on account of its rapid decay and the exuberant growth of branches, the lopping off of which occasions much labour and expense. For beauty of shape and foliage the solitary *nela-mávina-mara* (*xanthochymus pictorius*?) forms a striking contrast to the former. Its branches commence near the ground, and, covered with elongated dark green glossy leaves, form, as they ascend, a gently inclined cone. The fruit, of the size of an orange and beautifully yellow, is rather acid, but it is eagerly sought after and eaten by the natives.

A graceful vegetable beauty of a different character is presented to view by the *bilwára* tree (*mimosa*) which, with its spreading airy crown of tiny pinnate leaves and small white fragrant flowers, is a graceful jungle ornament. The wood is very hard and strong. Near banks of streams and watercourses the coldera bush or fragrant screwpine (*pandanus odoratissimus*) is commonly found, and much used for making mats and umbrellas. In many arid places in the east and north of Coorg the dwarf date-palm (*phœnix farinifera*) nearly monopolizes the ground. Its leaves are made into mats and baskets, and from the small stem a farinaceous substance is prepared for food. A hillock of date palms before the hot season in January presents the appearance of what we hope may be a thing of the past, a bored coffee estate.

At Fraserpet there are a few trees of the valuable *dividivi* or shumach tree (*cæsalpinia coriaria*). It is a small umbrageous tree and would do very well for coffee-shading; its incurved oblong pods contain about 50 per cent of tannin, the price of which varies in Europe from £ 8 to £ 13 a ton, so that its cultivation might pay as a commercial enterprise.

Thus these eastern jungles contain a number of useful trees. Here may be added a few trees, growing in the open, but thriving remarkably well in Coorg, *viz*; the several representatives of the Ficus tribe, especially the banian tree (*ficus indica*), of which there are some beautiful specimens near Fraserpet, to which the elegant lines of Southey in the *Curse of Kehama*, so truly apply:—

It was a goodly sight to see
That venerable tree.
For o'er the lawn irregularly spread,
Fifty straight columns propt its lofty head;
And many a long depending shoot,
Seeking to strike its root,
Straight like a plummet, grew towards the ground;
Some on the lower boughs, which crost their way,
Fixing their bearded fibres, round and round;
Some to the passing wind at times, with sway
Of gentle motion swang.
Others of younger growth, unmoved, were hung
Like stone drops from the cavern's fretted height.
Beneath was smooth and fair to sight,
Nor weeds nor briars deformed the natural floor.
And through the leaf-cope which bower'd it o'er
Came gleams of checkered light.
So like a temple did it seem, that there
A pious heart's first impulse would be prayer.

The *pippul* (*ficus religiosa*) is likewise a large tree and found near every temple in Coorg, but growing best in the drier districts. This tree proves most destructive to neglected buildings; when once rooted in crevices, nothing can withstand its progress. More common than both the preceding trees is the *atti-mara* (*ficus glomerata*) with fruit much like the common fig, which is eaten by the natives. The Indian caoutchouc tree (*ficus elastica*) also occurs and is not only a useful but highly ornamental tree. The milky juice obtained from incisions into the bark is exposed to the air, when the caoutchouc or elastic substance spontaneously separates, leaving a fœtid whey-coloured liquid.

Almost a stranger to Coorg, and growing only in several places along the Kávéri between Fraserpet and Somawarpet, is the tamarind tree (*tamarindus indica*), which Government has reserved, and partly made over without tax to certain Brahmans in Ramaswami Kanave, partly farmed out on yearly rent. It is a stately tree and yields a dense shade, under which, however, many plants do not grow and natives do not like to rest.

It would lead too far to enter upon a description of the many shrubs, herbs and grasses of the Coorg jungles. Suffice it to say that there are many and very beautiful ones, but most of them are annually swept away by the periodical fires, the purifying messengers of nature, that run through almost every jungle from February to April. These fires, once established in the high coarse hill-grass, rush madly in their onward career to the very tops of the mountains, and beautiful is the sight at night of these distant serpentine lines of flame extending over whole ranges of hills.

Ferns.—Coorg is rich in ferns, and as these elegant plants will always

attract the lover of nature, it may perhaps prove acceptable to append a list of such as have been collected about Mercara and identified by Mr. Richter according to Major Beddom's work on Ferns.

Names.	Where to be found.
Acrophorus immersus	On trees and at the foot of trees; near Ball-practice ground, Falls, &c; common.
Do. pulcher	On trees and rocks; near Ball-practice ground; abundant almost anywhere.
Adiantum capillus veneris	In a wall close to the Fort.
Do. caudatum	Near Ramaswámi Kanawé.
Do. hispidulum	Near Ball-practice ground; 3rd milestone, Suntikoppa Road.
Do. lunulatum	Common everywhere.
Alsophila glabra	Road to Falls, large fronded tree of low stature.
Do. latebrosa	Road to Falls, (common tree fern).
Angiopteris evecta	Road to Falls, common in all moist places.
Aspidium polymorphum	Road to Falls, abundant in a deep kadanga.
Do. contractum	Same place as former one, also in a lane near 3rd milestone Suntikoppa Road.
Asplenium contiguum	On trees, between 1st and 2nd milestone, Mangalore Ghat.
Do. falcatum	On trees, Sapper Lines, Road to Falls.
Do. formosum	On trees, in a deep ditch near Race-course.
Do. furcatum	On trees, near Ball-practice ground; common.
Do. heterocarpum	In a kadanga on Road to Falls, in moist shady ravines.
Do. planicaule	Very common, on trees.
Do. resectum	Near 3rd milestone, Suntikoppa Road in a ravine, also on Road to Falls.
Do. trapeziforme	Near 3rd milestone, Suntikoppa Road, and in a ravine near Race-course.
Athyrium Hohenackerianum	Abundant on all banks during the monsoon.
Blechnum orientale	Common everywhere.
Botrychium virginicum.	On trees, at the foot of Prospect Point Hill on Road to Kadle-kádu.
Do. subcarnosum	Road connecting Cannanore and Mangalore at Louden Valley Estate.
Ceratopteris thalictroides	In a swamp in Muctoom Sahib's Estate, Nalknád Road, 3 miles from Mercara.
Cheilanthes farinosa	Very common (silver fern).
Do. tenuifolia	Three miles out on Nalkanád Road, also Rajah's Seat, generally in dry places.
Davallia bullata	Five miles out on Nalkanád Road, on road connecting Cannanore and Mangalore Ghats, grows on trees, pretty common.
Do. tenuifolia	Common everywhere.
Diplazium dilatum	On Road to Falls.
Do. lasiopteris	On Road to Falls; near Ball-practice ground.
Do. polypodioides	Between 1st and 2nd milestone, Mangalore Ghat; quite a tree fern.
Do. sylvaticum	On Road to Falls.
Drymaria quercifolia	Four miles out on Nalknád Road on trees.
Gleichenia dichotoma	Very common.
Goniopteris prolifera	Fish river, Kaden-kadu Estate.
Gymnogramma leptophylla	Near 1st milestone, Mangalore Ghat. On a bank on Road passing Government School.
Gymnopteris fee	Muctoom Sahib's Estate, Nalknad Road; on rocks, trees.
Hemionitis cordata	Very common on Suntikoppa Road.
Lastrea aristata	Common on Road to Falls.
Do. cochleata	One of the commonest ferns.
Do. falciloba	Very common.
Do. hirtipes	Near Nalknád palace.
Do. membraniifolia	Muctoom Sahib's Estate, Nalknád Road.
Do. ochthodes	Very common.
Do. roensa	Near Ball-practice ground; on Road to Falls.

Names.	Where to be found.
Lygodium scandens	In a swamp 3 miles out on Nalkanád Road; 4 miles down Cannanore Ghat.
Microlepia polypodioides	In a ravine near 3rd milestone Mangalore Ghat.
Nephrodium abruptum	Muctoom Sahib's Estate, Nalknád Road.
Do. molle	Very common.
Do. propinquum	Muctoom Sahib's Estate; also Anandapur, Kempu Kolli Estate.
Do. terminans	Abundant on Nalkanád Road.
Do. unitum	Muctoom Sahib's Estate.
Nephrolepis exaltata	A common wayside fern, in moist places.
Do. tuberosa	Near Rajah's seat; common.
Niphobolus porosus	Nalknád Road on trees; rather common.
Oleandra neriiformis	On Nalknád Road; on Road connecting Cannanore and Mangalore Ghats; on trees.
Ophioglossum reticulatum	On Ball-practice ground and in the Fort.
Do. previpes	Near Kaden-kádu on banks of Fish river.
Osmunda regalis	Abundant on banks of Fish river.
Pleocnemia aristata	Two miles beyond Murnad bungalow.
Pleopeltis irioides	On trees and in bamboo clumps, Nalknád Road.
Do. membranacia	Third milestone, Mangalore Ghat abundant in moist shady places, on trees.
Do. oxyloba	Abundant on trees.
Do. phymatodes	On trees.
Do. wightiana	Very common.
Paecilopteris contaminans	Falls.
Do. terminans	Falls.
Polybotrya appendiculata	In ravines near May-mule Estate; also Sómawarpet Road.
Do. asplenifolia	Falls.
Polypodium ornatum	Third milestone, Mangalore Ghat; on Road to Falls.
Do. regulosum	Banks of stream near Post-Office; near Falls, &c. common.
Pteris aquilina	The commonest fern in Coorg.
Do. critica	On Road to Falls, abundant.
Do. geraniifolia	Near 3rd milestone, Suntikoppa Road; also near Ball-practice ground.
Do. longifolia	Abundant in and about the Fort.
Do. pellucens	Near Nalknád; also near May-mule Estate, Beltamale Estate.
Do. pellucida	Common in all jungles about Mercara.
Do. quadriaurita	Very common.
Do. argentea and rubronerva	Varieties, both abundant especially the latter.
Sagenia coadunata	Very common.
Schizoloma ensifolium	At the top of the Falls; very abundant and handsome.
Do. hetcrophyllum	On Road to Falls, near Sapper Lines.
Do. nitens	Muctoom Sahib's Estate; has not been met with anywhere else as yet.
Trichomanes filicula	On trees near 3rd milestone, Suntikoppa Ghat; Nalknád Road.
Do. rigidum	On the Bank of the stream that forms the Falls.
Vittaria elongata	On trees, Nalknád Road about 4 miles ont on the right hand side.

To facilitate reference to the vegetable products of Coorg jungle trees and plants, they are here enumerated under the classification of—

a. Gums (soluble in water)—They are obtained from the cashew-nut tree (*anacardium occidentale*), the ambate-mara or hog-plum (*spondias mangifera*), the atti-mara (*ficus glomerosa*), the gambali-mara, the halumatti-mara, the jack tree (*artocarpus hirsutus*), the elephant or wood-apple tree (*feronia elephantum*), the bastard teak (*butea frondosa*), and the babul tree (*acacia arabica*).

b. Caoutchouc—or elastic gum is supplied by *ficus elastica* and *isonandra acuminata.*

c. Gum-resins—Of these gamboge is the produce of *garcinia pictoria*, kino of *pterocarpus marsupium*, kundricum of *boswellia glabra*, odina gum of *odina wodier*, and others of the *neem* tree and *bombax malabaricum.*

d. Oleo-resins—Are obtained from the black dammer tree (*canarium strictum*), the rál (*shorea robusta*), the Indian copal (*vateria indica*), the wood-oil tree (*dipterocarpus lævis*), the *calophyllum inophyllum*, and the *terminalia coriacea.*

e. Oils—extracted from the seeds of the *neem* tree, the Alexandrian laurel, the *poonali*, the *nirala*, and the *kákcrate* tree.

f. Fibres—obtained from the kóli, antupurle, and bendé-mara, the Indian fig, pippal, banyan and red-wooded fig tree (*ficus racemosa*), the variegated American aloe, the long aloe (*agave vivipera*), the Indian hemp (*crotalaria juncea*), the bow-string hemp (*sansevicra zeilanica*), the plantain (*musa paradisiaca* and *textilis*), the paddy straw (*oriza sativa*), the mat-rush (*cyperus textilis*), the broom grass (*aristida setacea*), the cotton plant (*gossypium herbaceum*), the silk-cotton tree (*bombax pentandrum*), the *conocephalus nivens*, the charcoal tree (*sponia wightii*), the *nerium grandiflorum*, and the sham hazel (*isora corylifolia*).

g. Tannin—the produce of the bark of the *babool* tree, the *neem* tree, the *bauhinia variegata*, the *buchanania latifolia*, the *hymenodyction excelsum*, of the pod of the *dividivi* tree (*caesalpinia coriaria*), and of the nut of the alali-mara (*terminalia chebula*).

h. Dyes—Red, obtained from the *rottleria tinctoria*, the Indian madder (*hedyotis umbellata*), Indian mulberry (*morinda citrifolia*) and the red sandal (*pterocarpus santalinus*). *Yellow*, from the bastard teak (*butea frondosa*), the gamboge tree (*garcinia pictoria*), the *xanthochymus pictorius*, and the *berberis tinctoria.*

i. Saponaceous matter—yielded by the bark of the babool tree, the pods of *mimosa saponaria*, and the fruit of the soapnut tree (*sapindus*).

Crops and Cultivation.

Native agriculture in Coorg, as elsewhere in India, is still carried on as it was centuries ago. A system of rural economy formed at a remote period, and transmitted for ages unchanged, is not likely to be disturbed by so conservative a people as are the Coorgs.

Rice.—This is the staple product of Coorg. The numerous valleys throughout the land have, from ancient times, yielded an unfailing supply every year for home consumption and for exportation to the Malabar Coast. The rice-valleys are most extensive in South-Coorg—in the neighbourhood of Virajpet and in Kiggatnád,—where some fields are of considerable breadth and several miles in length; but owing to the surrounding low deforested hills, which yield little fertilizing detrition, the soil is of a quality inferior to those fields of the narrower valleys near the Ghats, where the ground is terraced at considerable pains, but every field large enough for the use of the plough.

The lower and broader fields of a valley, having a rivulet running through them, are called *bailu-gadde*, and those terraced up along the sides, and chiefly depending on the rainfall, are named *maki-gadde*. The total area under rice cultivation may be estimated in round numbers at 69,000 acres.

The rice cultivated throughout Coorg, and in general use, is the large grained *dodda-batta*, which is also exported. A finer and more palatable kind is the small rice *sanna-batta*, and a red variety the *késari*; for parched rice the *kalame* is the kind used.

Except in a few valleys in North-Coorg, there is annually but one rice crop, but its return is so rich that the ryots may well be satisfied, and allow their wretched cattle rest and their fields to lie fallow, or to "sun themselves," as the natives say, for the remainder of the year. Whilst in the low country, and also in some parts of North-Coorg, the average return of one crop is from 10 to 25 fold, that in most parts of Coorg proper is from 40 to 60 fold, and in seasons of extraordinary fertility even from 80 to 100 fold.

The agricultural implements are few and of the rudest kind. The plough, constructed by the ryot himself, consists of a sampige-wood ploughshare, with an iron point, a handle of pali-wood, and a pole of ságo-palm wood for the yoke, and is so light that the farmer carries it to the field on his shoulders. Its value hardly exceeds one rupee. The *tave*, which answers to our English harrow, is generally a simple board, to which a split bamboo is fastened to connect it with the yoke. The driver standing on the board adds to the efficiency of the operation, be it for pulverizing dry ground, as in the Múdu-shime or eastern district, or smoothing and levelling the wet fields. A strong sickle and a mamoti or hoe complete the stock of farming implements. To

cultivate 100 butties of land, which is equivalent to an area yielding 100 butties at 8 seers by measure of paddy or rice in the husk, a farmer requires either a pair of bullocks, or a pair of buffaloes, one plough and two labourers. On Monday he does not plough with bullocks but with buffaloes only, considering Monday as the day of the bullock's creation.

Whatever of cattle manure and dry leaves has been collected during the year, is in the dry season carried by the women to the fields in large baskets and deposited in little heaps, which are there burnt and the ashes subsequently strewn over the ground. With the first showers in April and May the ploughing commences. On a propitious day, before sunrise, the house-lamp—*táli-akki-balake* (dish-rice-lamp)—which plays a conspicuous role on all festive occasions, is lighted in the inner verandah; the house-people assemble and invoke their ancestors and Kávéri Amma for a blessing; the young men make obeisance to their parents and elders, and then drive a pair of bullocks into the paddy-fields, where they turn the heads of the beasts towards the east. The landlord now offers cocoanuts and plantains, rice and milk to the presiding deity of his Nád, and lifting up his hands in adoration to the rising sun invokes a blessing. The oxen are yoked and three furrows ploughed, when the work is finished for that morning. Of the turned up earth they take a clod home to the store-house or granary, praying Siva to grant them a hundred-fold increase.

This recognition of the source of material well-being is followed by personal industry that should command success. From 6 to 10 in the morning the ploughing is continued, till all the fields are turned over 2 or 3 times. Then the borders are trimmed, the channels cleaned, and the little banks between the fields repaired to regulate the water.

By the end of May one part of the fields which commands a permanent water supply and which has been well manured, is prepared for a nursery, by repeated ploughing and harrowing, whilst the whole field is submerged. For every hundred butties of land, from 2 to 2½ butties of grain are required for seed. The seed paddy is heaped up on the north side of the house, watered for 3 days, then covered up with plantain leaves and stones, till it begins to sprout. The nursery ground has meanwhile been again ploughed and harrowed, and the water allowed to run off, so that the grain when sown is just imbedded in the soft mud. After 20 or 30 days the blades have attained a

height of about one foot, and the seedlings are ready for transplanting. Pleasing as are young corn and clover fields in Europe, there is no vegetation there that surpasses in beauty the brilliant green of a rice nursery. The eye is irresistibly attracted to these bright spots, and rests upon them with the utmost delight.

Regulated by the monsoon rain, the rice-transplanting takes place during July and August. The women, covered with leaf-umbrellas called *goraṇas*, that rest on the head and protect the whole of the body, pull out the plants from the nursery and tie them in small bundles, which are collected in one spot. Meanwhile the submerged fields are repeatedly ploughed and levelled with the *tave*, "till the soil is soft as treacle, white as milk the foaming surface," when all the men of the house, placed in a line and standing almost knee deep in the muddy fields, begin the transplanting, in which women are not expected to join. The bundles are conveniently deposited over the field; each man takes a handful of plants at a time into his left, and with the right hand presses with great rapidity 6 or 8 seedlings together into the mud, keeping a regular distance of about 6 inches.

Before the completion of the largest field, an open space of about 10 feet wide is left throughout the whole length. This is the Coorgs' race-ground, and offers right good sport which greatly exhilarates their monotonous task. All the men engaged in the work—and 15 are reckoned for a 100 buttics of land—may run, but 4 or 5 only obtain a prize. Wearing merely a pair of short drawers, they are eager for the run, for which their powerful legs well qualify them. The signal is given, and away they scramble and plunge and stagger in the deep mud, roars of laughter greeting the unfortunate wight who sinks in. Having reached the opposite bank, they return the same way, and hard is their struggle as they near the winning post. The first comer is rewarded with a piece of cloth, the second with a bunch of plantains, the third with a jack-fruit, the fourth with a basket of oranges, and the fifth with parched rice. When all the fields are planted, a feast for the people is given by the landlord.

As a protection against the evil eye, some half burnt bamboos, about 6 feet high, are erected in a line throughout the middle of the fields. It is now the farmer's business to regulate the water supply of each field, and to fill up holes made by crabs in the embankments. Also the weeding is attended to, and any failures are replanted. At

the end of October, when the ears of the grain are fully out, huts on high posts are erected, one for every 100 butties, for the watchman who guards the crop against wild beasts, occasionally firing off a gun.

In November or December the paddy gets ripe, and the Feast of First Fruits or *Huttari* is celebrated, after which the paddy may be reaped. The water is drained off the fields, the paddy cut down with sickles close to the ground and spread out to dry; after 5 or 6 days it is bound up into sheaves, carried home and stacked in a heap, the ears turned inside. In January or February, chiefly in moonlight nights, the sheaves are taken down to the threshing floor, spread round a stone pillar fixed in the middle, and trodden out by bullocks and buffaloes, when the paddy is winnowed, the best quality reserved for seed and the rest stored up in the granary for home consumption or for sale, the price varying from 2 to 4 Rs. a butty of 80 seers. A threshing machine, introduced by Captain Mackenzie, excited the astonishment and admiration of the natives; but the hand-labour of two coolies for turning it appeared to them too severe and impracticable for large quantities of paddy. A winnowing machine would find greater favour.

Cardamoms.—The cultivation of this plant is to a great number of Coorgs next in importance to that of rice, and the possession of a fine cardamom jungle is regarded as a mine of wealth. In the time of the Coorg Rajas, and for some time after, cardamoms were a Government monopoly, and the cultivators had to sell their produce at a fixed rate to the Sircar, receiving from 12 to 20 rupees per maund of 40 seers dry capsules. Now the jungles are held from the State on a lease of 10 years, at 3 lakhs of rupees for the whole period, which expires in March 1878. Any jungles that were not disposed of at the lease-auction are worked by the ryots for Government.

The cardamom plant (*elettaria cardamomum* Kan. *yélaki*) grows spontaneously in the evergreen forests or Malés along the Ghat-line and its spurs, at an elevation of from 3,000 to 5,000 feet. Still, nature requires a certain stimulus to produce the plant in greater abundance, and this is effected by a singular process, which though perfectly empirical on the part of the natives, is no doubt based on a natural law which holds good in many other instances, where seed is kept in the ground in a state of vitality for a long period till such a change in the clima-

tic condition is brought about as will favour its germination and subsequent growth. Of many other instances besides the cardamom, there need only be mentioned the Mexican thistle (*argemone mexicana*), the white weed (*ageratum cordifolium*), and the charcoal tree (*sponia wightii*), all of which spring up spontaneously on newly cleared or broken up favourable soil.

The cardamom requires a rich moist soil in a bracing hill climate, accessible to sea breezes and favoured by deep shade and partial sunshine. A western or northern hill-slope offers the greatest advantage. The following is the method of propagating it. A working party of about 10 men start for the forest in February or March; and the site for a garden being fixed, one of the largest trees is marked for felling; a temporary hut is built on a convenient spot and operations are commenced. The smaller trees and brushwood are cut down to some distance round the giant tree that is to be felled, and a platform some 10 feet high built close to the tree on the upper slope. This being finished, the party sets out early next morning with 4 good axes; and a couple of woodmen, generally Kudias or Yeravas, standing on the platform, belabour the tree with all their might. When tired they are relieved by their comrades, for their work must be finished by noontide or they will be unlucky. At noon a cutting is made in the front part of the trunk; a few finishing strokes being then given to the side facing the high ground, the tree trembles, bends over, and topples down the side of the hill with a thundering crash, carrying down in its precipitate fall a number of smaller trees. The thorough shaking of the ground is the essential object of this operation. A piece of ground thus prepared is called a *garden*, and according to the size of the large trees the party may cut down more than one in a day, and clear as many as four or five gardens.

Within three months after the felling of the tree, the young plants shoot up all over the ground shaken by the fallen giant, especially near its stem and roots, and reach a height of one foot, with 8 or 10 leaves, within the first year; in the third year they will be 4 feet high and require a little culling, whilst previously one annual weeding is all the necessary work. In April of the third year the fruit-bearing racemes shoot forth from the ground; they are alternately covered with short-stalked beautiful pale-white solitary flowers of a lion-mouthed shape, marked with purple-violet stripes in the centre. The numerous angular black seeds are closely packed in oval trivalvular capsules of a yellowish

white colour, and, if bruised, have a pungent aromatic taste. On this account, and for their cordial stimulant properties, they are much in use as an agreeable spice and as a medicine for allaying cough and vomiting.

The capsules ripen in September or October, when the crop is gathered, and being the first, is dedicated to the deity and called *Déva-koṭṭu* (God's gift). A full harvest, however, is collected only in the fourth year, and the plants may continue to yield a good crop for seven successive years, when on their decline they are reinvigorated by the felling of another tree on the top of them. According to the number of fruit-bearing racemes on one stem, which amount from one to four, the crop is estimated as a quarter, half, three-quarters or a full crop. The perennial stem of the full grown plant is erect, jointed, and from 6 to 9 feet high, enveloped in the sheaths of the 1 to 2 feet long lanceolate leaves.

The early gathering of the cardamoms is attended with much hardship, especially when the gardens are not in U-males, i. e., hills near the úru or village, but far away in the Gade-males, as the high and sharp-edged hill-grass is in October infested by innumerable leeches and poisonous snakes.

The cardamom gatherers, consisting of a party of Coorgs with their coolies of the Páleya, Kudiya, Yerava and Kuraba caste (the Holeyas not being permitted to set foot on these grounds), first set up a camp near the garden. A hut, thatched with the long hill-grass, is erected. At night a fire is kindled and the men sleep round it. Early in the morning they are at their work. One party clears the ground of weeds, another cuts the fruit branches. Each man gathers a good load into his leafy basket, formed of the *netti-mara*, and returns to the hut before sunset. After a hearty meal, they pick the capsules from the branches, an operation that keeps them up till late at night. With the dawn of day the men set out again for the plantation. The master remains. At noon the women of the house arrive; the picked cardamoms are measured into bags, which they carry home to the drying ground. In the Gade-males the cardamoms are dried on the spot, on a bamboo mat in the open, but near a sheltering hut in case of rain. They are thinly spread and require but 4 days' hot sun to dry; further exposure would cause the capsules to burst, which is avoided. Before the capsules are ready for the market, the fruit-stalks are rubbed off and all impurities removed. When assorted according to size and colour, they are stored

away in closed baskets in a dry room, to preserve their aroma. Mopla traders or their agents visit the Nâds at this time with a stock of bright handkerchiefs and other attractive finery for the Coorg women, and make many a good bargain.

Some Coorgs gather from 30 to 50 maunds in weight of dry cardamoms, one maund (equal to 1100 rupees in weight) being worth from 50 to 65 rupees in Coorg. The average produce of one garden of a quarter of an acre in extent may be estimated at 12½ lbs weight of dry cardamom. The contingent expenditure is insignificant. With more systematic cultivation—for cardamom is easily grown from seed and root—seedlings and roots might be transplanted, and by trenching, manuring and irrigation, the produce greatly increased in quantity : but the owners of cardamom jungles require to have them on a longer lease to make such extra expenditure remunerative. Of late years there have been great fluctuations in the price of cardamoms. The spice is highly prized by all Asiatics, and owing to the increased facilities of transport, the demand steadily increased and outran the supply ; very high prices were thus for some time realized. This however led to a large area of virgin forests being brought under cultivation, and the prices have again fallen considerably; but as the range of habitat of the plant is extremely limited, and as the demand for the spice is greatly increasing both in Europe and Asia, it is believed that ere long the price will go up again. Mr. Forsyth in the report on his expedition to Yarkhand, the chief trading depôt of Central Asia, states that in the Yarkhand bazar cardamoms are sold at a rate which is twenty times as great as the price they then fetched in Coorg. In 1876 the market is still depressed, and some owners of cardamom jungles have applied to Government for a reduction or temporary relief of the lease.

Coffee.—There are but few Europeans or Natives in Coorg who are not interested in coffee cultivation. As the rush to the Ceylon coffee districts before the memorable years of 1847 and 1848, so has been the influx of European settlers to Coorg for the last 12 years. Their number is now over a hundred, and the change already effected in the appearance of the country would surprise one who left Coorg 10 years ago. The capabilities of the Province as a coffee-growing country have long been known to the natives, and it is a matter of surprise that European enterprise did not enter on the field till so late a date. It is conjectured that in the time of the Coorg Rajas,

some Moplas, to whom they had given land near Nalknad, introduced the shrub from seed which was brought from Mocha, or perhaps second-hand from Manjarabad. Its successful and profitable cultivation was at first concealed from the Coorgs, but these were shrewd enough to find out for themselves that, whilst none of the fabled fatal consequences followed the cultivation of the shrub, there was a ready and lucrative sale for the produce. Through the exertions of the first British Superintendent, Captain Le Hardy, who took a deep interest in the material prosperity of the country, the cultivation of the coffee plant was largely extended amongst the natives, and now there is hardly a Coorg or any native house that does not pride itself on a coffee-garden comprising, it may be, only a few trees or as many acres.

The native mode of cultivation was exceedingly simple. The plants, reared from seed in a nursery, were in the monsoon put out on a shady hill-slope, the underwood of which had been previously cleared away. An occasional weeding was all the attention bestowed upon the plants, which, in 3 or 4 years, according to the density of the covering shade, gave a promising crop. This was picked, dried and disposed of in the husk to the merchant, in the same way as cardamoms, the price of dry cherry coffee averaging from 7 to 10 rupees per batty of 80 seers measure.

When coffee cultivation was taken in hand by European skill and energy, the industry soon assumed greater importance. Mr. Fowler, the first European Planter, opened up the Mercara estate in 1854 ; Mr. H. Mann became the pioneer on the Sampáji Ghat in 1855 ; Dr. Maxwell opened up the Perambadi Ghat estates in 1856 ; and in 1857 Mr. Kaundinya founded Anandapur village with a most promising plantation in the Bamboo district. Round these first centres of cultivation dozens of extensive estates sprang up within a short time. Every one who beheld a hill-side covered with the rich luxuriant coffee shrub was bewitched by its golden promises. Here seemed to have been discovered the Eldorado of honest industry, in a delightful climate and home-like country! Natives too, enriched by the sale of forest land, followed the example of the European planter, and opened up large estates ; private and public companies were formed to embark in the lucrative speculation ; forest land was to be had either from Government for the mere asking, or by purchase from native holders. Cooly labour flowed in plentifully. Thousands of acres of the finest forest land fell under the

planter's axe. Every new settler was hailed as a lucky fellow, whose lot was cast in pleasant places. Lakhs of rupees were spent in the expectation of a cent per cent return. As the time approached for the looked for fabulous income, the excitement rose apace. Envy fixed its eye upon the fortunate planter. But never did he stand more in need of pity and sympathy than at that time. A succession of bad seasons disappointed his prospects year after year; then the Bug infested the finest estates on the Sampáji and Perambadi Ghat; and scarcely had it left, when the terrible White Borer threatened to destroy the very foundation of his prosperity. There are but few planters who have as yet escaped either of these dire calamities, and their success makes the loss of others all the more felt. There is however no cause for despair. The soil and climate of the country seem eminently suitable for coffee cultivation. Coffee may yet succeed in Coorg, and the undaunted planter may yet have his reward if the method of cultivation best suited for each locality is carefully adopted, and if with the increase of jungle vegetation, especially bamboos, better seasons may be expected to return and the White Borer to disappear.

The approved methods of coffee cultivation in Coorg are—planting either under shade, or on open ground; and an intelligent planter will be guided by his experience of the elevation, exposure and amount of atmospheric humidity of his locality, which method to adopt. If shade-planting is decided upon, there is the choice between natural and artificial shade, and in either case due regard is paid to full light and free circulation of air. The former method is but an improvement of the native way of planting already described. For artificial shade-planting the jungle trees are all removed and either burnt or—which seems to be better—piled up and allowed to rot, when of the spontaneous new growth, especially the *sponia wightii* or charcoal tree, which springs up like weeds, a sufficient number of trees is allowed to remain. More permanent shade-trees, however, are the jack tree and the various species of Ficus, seeds or branches of which are put down at regular distances on the plantation, and after 5 or 6 years the young trees offer already partial shade. Coffee grown after this method thrives remarkably well in the Bambu district, where some splendid and highly lucrative plantations exist. Coffee trees on open but not too steep and exposed ground, that require no shade owing to a moister atmosphere, are evidently in a congenial habitat; they grow strong, live long, and yield successively

more regular crops than trees under shade. Some of the Sampáji Ghat estates nearest Mercara are of this description, and their present appearance is very promising.

The soil and elevation best suited for cardamoms is also well adapted for coffee cultivation, hence at first the desire to secure cardamom jungles for coffee plantations.

The coffee plant is generally grown from seed, for which purpose the best cherries of the finest trees are selected. As the seed soon loses its vitality a nursery is rapidly made in December and daily watered, when after a month or six weeks the reniform seed-leaves make their appearance and cover the beds with their glossy green.

After a piece of land has been cleared and regularly pitted with holes, 18 inches cube and at a distance of 5 or 6 feet from each other, the surface soil is filled in and a peg fixed in the centre of each. With the first burst of the monsoon, the sturdy seedlings of 3 or 4 pairs of leaves are removed from the nursery, with a ball of earth attached to the roots, and transplanted into the holes marked by the pegs. This is the surest and therefore cheapest mode of planting.

Weeding is the next operation to be carefully attended to. But where, from the nature of the soil or of the lay of the land, there is danger of loss of surface-soil from heavy rain, no hoe weeding is allowed during the monsoon, but only hand-weeding or cutting with grass-knives, and after the monsoon, a breaking up of the soil to turn the weeds down. Easy roads are laid out to bring every part of the estate within ready access, and at the same time to be the means of an effectual drainage.

With the end of the first year's operations, the planter very likely builds for himself a simple cottage on a convenient spot that commands a fine view, and some bungalows are most beautifully situated. With the third year the estate comes into flower and bearing. In March or April the snowy white expanse of blossoms, but slightly relieved by the dark green foliage, delights the eyes with its morning freshness and purity, and the jessamine-like flowers in their bridal glory fill the air with an agreeable aroma. Let us examine a three years' old tree of the best growth. It is 4 feet high, of a pyramidical shape, with alternately opposite branches (primaries), of which the topmost are 8 inches and the lowest 3 feet long, and these again are subdivided by secondaries and tertiaries. The flowers, in appearance like jessamines, are on short stalks, in clusters round the branches. They last but two days. The tree

under examination numbers 20 pairs of branches, and 3 inches from the stem the clusters of flowers begin; the lowest branch contains 22, the middle 8 and the uppermost 2 clusters, with an average of 12 blossoms each. These do not all set and produce mature berries, but give an idea of the fertility of the shrub. Gentle showers or heavy mists at this time greatly enhance the fecundity of the blossoming, hence the importance of spring rains. The leaves are oblong, lanceolate, dark green and glossy on the upper, paler on the lower side, and form a striking contrast with the snowy flowers or red berries. After a fertile blossoming, the ovaries, if favoured by a few showers, swell rapidly and form green berries, resembling olives. In October these become hard, turn yellow, and ripen into a deep red. The berries now resemble cherries. We open one. A sweet aromatic succulent pulp encloses two beans, which are surrounded by a parchment-like skin, which, when dry, easily drops off. A thin silky skin, called the "silver-skin," is the last coating of the bean, which, if of good quality, is long, of a bluish green colour and of a peculiar aroma. In some cherries there is but one bean developed, which fills up the whole space. It is round, and called pea-berry, and fancy assigns to it a higher price in the market than to ordinary coffee.

The separation of the fresh pulp from the beans is effected on the estate, by a machine called the *pulper*. The pulper is an iron cylinder, covered with a brass or copper sheet, the outer side of which is made rough by a great number of triangular projections. This cylinder is fixed on a shaft, and so placed in a frame that it keeps at an adjustable distance from a front plate, called the *breast*, with fluted curves that lead to so many openings through which the pulped coffee beans drop. In a late construction the cylinder itself is fluted and entirely of iron. In Walker's disk-pulper the pulping action is perpendicular on either side of the disk or disks. The cherry coffee is fed into the pulper from above by a jet of water, and the cylinder made to revolve by hand, bullock, water, or steam power. The beans fall through the breast-holes into a dry cistern, while the husks drop down behind the pulper and are carried away by a water channel. The beans are still in their parchment covering, and surrounded with gummy saccharine matter, which, after fermentation for 36 hours, is washed off, when the parchment coffee is spread out on tables to dry. When the beans are cut by the pulper, the coffee is called "pulper bit" and loses about 20 per cent in value.

The well dried coffee, which should not be over 35 lbs. per imperial bushel, is sent to the Coffee Works on the Western Coast, or to Hunsur and Bangalore, to be prepared for the home market. On arrival at the coffee works the parchment coffee is examined, weighed, and if necessary, thoroughly dried before the process of peeling commences: It is then fed by coolies into a large circular iron trough, and crushed, yet so gently that the bean is not injured, by large broad iron wheels worked by steam power which revolve in this groove. This machine is called the *peeler*. The coffee then falls into a receptacle whence it is taken by an elevator and thrown into the *winnower*, which separates the parchment from the beans. The chaff is used as fuel for the engine. The clean coffee beans are thrown into long iron cylinders with perforations of different sizes, which whilst slowly revolving sort the beans into three classes. The largest beans fetch the highest price, and next the pea berries. The last operation is the garbling, by the deft hands of women, who separate all broken, discoloured, and pulper bit beans that constitute the triage.

The charges for curing coffee and putting it on boardship are £ 5 per ton, and the shipping charges £ 4 to 5 through the Suez canal. Coorg coffee resembles that grown on the Shevaroy and Nilgiri hills. Of the coffee grown in the Bambu district about 86 bushels go to the ton, whereas it takes 90 to 95 bushels of that grown in the forest tracts to make up the same weight.

Considering that every crop takes a certain amount of nourishment out of the soil, it is clear that something in the shape of manure must be given to it in return, and it is generally acknowledged, that according to the chemical analysis of the coffee bean, the Coorg soil wants phosphate of lime, carbonate of magnesia and potash as the principal ingredients of the requisite manure, and a mixture of superphosphate of lime and Peruvian guano, or stable-manure, chunam or carbonate of lime and ashes may be the nearest approach to it. Experiments with different proportions of these materials on a number of trees of equal growth soon shew which is the most effectual mixture for each locality.

Of almost equal importance with manuring is the pruning of the trees, whereby the extravagant elaboration of the sap is checked and the fertility of the soil economised. It is this operation which makes the planter most familiar with his trees, and which impresses upon the appearance of an estate as decided a stamp as the system of training

characterizes a school. It is amusing to hear a planter call one's attention to this and that "dear little tree," which he has "brought round by pruning"; but these are often the men who do justice to a plantation and who eventually succeed.

The export of coffee for the last 18 years, as will be seen from the subjoined table, has been steadily increasing, though with fluctuations:—

Year.	Quantity exported.			Estimated Value in Rs.
	Tons.	Cwts.	Qrs.	
1857—58	579	4	0	2,89,600
1858—59	835	15	2	4,17,850
1859—60	1,379	2	0	6,89,550
1860—61	1,605	3	0	8,02,550
1861—62	1,922	5	1	9,61,125
1862—63	1,751	8	1	8,75,700
1863—64	2,927	5	2	14,63,625
1864—65	3.000	0	0	15,00,000
1865—66	3,125	0	0	15,62,500
1866—67	3,250	0	0	16,25,000
1867—68	3,000	0	0	15,00,000
1868—69	2,758	15	0	23,79,375
1869—70	1,496	4	0	6,00,000
1870—71	5,000	0	0	21,00,000
1871—72	3,375	0	0	16,20,000
1872—73	6,497	15	0	39,63,270
1873—74	4,887	10	0	45,60,500
1874—75	4,234	14	0	27,10,216

The Coffee-estate Survey was completed in March 1875, at which time the total number of estates was 4,235, covering an area of 106,759 acres, and yielding an assessment of Rs. 96,244. Of this sum Rs. 54,931—8—0 was derived from 46,472 acres held by Europeans, and Rs. 41,312—8—0 from 30,068 acres held by Natives: this acreage, however, represents only those estates which then came under the assessment rules; of the whole area about 50,000 acres are held by Europeans.

The coffee estates in Coorg may be classified into three groups:—those of the *Mercara plateau*, those of the *Ghat ranges*, and those of the *Bambu district*. Each group has its distinctive features, advantages and disadvantages.

The Mercara plateau, on an average elevation of 3,500 feet, and in

the planted up portion partially rising up to 4,000, enjoys a bracing climate, being equally exposed to the sweeping monsoon rains and to the drying east winds. With an average rainfall of 123 inches, distributed over almost the whole year, the moisture is ample. The granitic soil consists generally of a red feldspathic clay, more or less mixed with gritty ferruginous stones, and covered with a layer of humus. The lay of the land being steep, it is evident that unless cultivation is carried on with due precaution against the "wash of the surface soil", by terracing, draining or a judicious system of weeding, the trees will in a few years be deprived of the coolest and most nourishing portion of the soil and the land become sterile. Artificial shade is not required, for the sheltered hill-sides and gently sloping valleys are here covered with the most luxuriant and productive trees.

The Ghat estates extend along both sides of the Sampaji valley on the high road to Mangalore, along the Perimpadi ghat beyond Virarajendrapet, and over the eastern and western declivities of the range of the Western Ghats. The tracts occupied by this group of estates, being originally covered with primeval evergreen forest, possess a splendid soil for cultivation, its fertility being heightened by a heavier fall of rain than on the Mercara plateau, and also by a variable condition of atmospheric humidity. The extensive felling of forest, however, followed by heavy burns, which destroyed a great deal of the valuable surface soil, converting the humus into ashes which were blown or washed away, and a faulty system of cultivation—planters vying with each other in mamoty weeding to shew a clean surface—have added to the impoverishment of the soil. The exposed trees, thus left without nourishment, during successive seasons of drought fell an easy prey to the Borer. Besides this well-known enemy to coffee, the Bug, the leaf-rot, and the leaf disease severely affected some of these estates. But there are still some left in this group, which, favoured by natural conditions and judicious management, unmistakably prove by their present yield the high capabilities of this range of land.

The Bambu district is comprised in the zone of deciduous forest extending all along the eastern ranges of hills. Its elevation varies between 3,000 and 3,500 feet; the rain-fall varies between 45 and 75 inches, steadily decreasing to the eastward. The nature of the land generally presents undulating slopes and but few steep hills. The soil is of the richest kind, as the humus from an exuberant vegetation, which annually decays or is consumed by jungle fires, has accumulated for ages

without being disturbed by heavy floods. The rain-fall is gentle and seasonable, and the growth of coffee throughout the district most luxuriant and productive. In fact, if anywhere in Coorg, the Bambu district is the very habitat of the coffee tree, and had it not been for the Borer pest, which committed its most destructive ravages here, the Bambu-estates would have secured the first rank in Coorg from the very beginning. The Borer is, however, no longer the dreaded enemy to the insidious ravages of which the Planter has helplessly to resign himself. Its destructive progress has not only greatly subsided, but experience has taught the Planter by vigorous and timely measures to keep it down to a minimum. On these estates artificial shade is deemed necessary.

Chinchona.—The cultivation of Chinchona was initiated on a small scale by Government in 1863, in a favourable locality 3 miles to the east of Mercara. There are now several hundred trees in a thriving condition, that yield quantities of seed for distribution, and for rearing new plants in the hot-house which was erected for the purpose on the premises of the Central School. Plants have already been distributed to those Taluk cutcherries in the compounds of which they were thought likely to grow, but through want of interest on the part of the native officials the experiment has proved unsuccessful. Seeds and plants have also been given to private persons, and on several coffee estates small patches have been planted with chinchonas for estate use. But the special cultivation on a large scale has not found favour with any Planter, though there is little doubt that wherever coffee—which belongs to the same natural order of Chinchonaceæ—grows in the open, chinchona will also thrive. There is moreover some diffidence regarding its success as a financial speculation, seeing that the Government plantations all over India are likely to supply every possible local want.

Of the many species of chinchona, the only one which will succeed at the elevation of Coorg is the *chinchona succirubra* or genuine red bark, which grows to a lofty tree and is rich in alkaloids, though less so in quinine. Mr. Broughton, the late Government Quinologist on the Nilgiris, analysed some Coorg grown barks with the following result :—

Quinine	1·04
Chinchonidine and Chinchonine	5·19
Total Alkaloids	6·23

Crystallised Sulphates of Quinine obtained	...	0.63
Do. Chinchonine ...	...	5·11
Total of Crystallised Sulphates	...	5·74

He considered this analysis satisfactory. It yielded its large amount of crystalline sulphates with greater ease than is usual in barks grown at a low elevation. Like nearly all red barks grown in India, the greater part of its alkaloids consisted of chinchonidine, a defect especially attaching to those which grow at a comparatively low elevation.

In 1875 there were 412 chinchona trees alive in the Government Garden; of these 70 were from 6 to 10 years old, 130 from 4 to 5 years, 123 three years old, and 89 newly planted: an addition of over 100 is to be made in 1876.

Tea.—Tea cultivation has received but little attention. To judge from experiments made by several gentlemen, there is no doubt that tea will grow in Coorg, but no capital has yet been invested in its cultivation.

Sugar cane.—The cultivation of sugar cane is a purely native enterprise, and chiefly in the hands of settlers from Mysore, who sell it for raw consumption or use it for the manufacture of jaggory, a kind of coarse sugar. It is propagated from cuttings, put down in April, and yields ripe canes in September the year after. It requires a moist rich soil that can be brought under irrigation. Some coffee planters have begun to stock their swampy ravines with sugar cane; but the produce not being large enough, it does not answer as a pecuniary speculation.

Cotton.—Cotton of a fair description has long been under cultivation to a small extent by ryots in the north-eastern parts of Coorg, where the fibre is used for home-made fabrics and the seed for oil. New species—the Sea-Island, New Orleans, Egyptian and Hybrid cotton—were lately introduced as experiments, and they throve very well, but the sudden depression in the cotton market discouraged any further pursuit of the speculation.

The seed is sown in May, on a well broken up rich soil, which is raised in long ridges 3 or 4 feet apart. The seedlings are sufficiently strong to withstand the heavy monsoon rains, and the pods ripen in October or November, when the sunny weather favours the gathering; perennial plants however yield ripe cotton almost at all seasons, and the monsoon crop is of course lost. Mr. Richter's experience on a coffee plantation near Anandapur with all available kinds of cotton seed, led him to the

conclusion that the Sea-Island and Berar-Hybrid would yield the most satisfactory results. Egyptian cotton grown in 1865 by Captain Taylor on the Sampáji Ghat, produced a fibre which was pronounced by the Bombay Chamber of Commerce the best that had reached the Bombay market.

Plantain.—The plantain (*musa paradisiaca*), of which there is a wild kind in the hill-jungles, is common all over Coorg near native dwellings. The succulent stem, 10 to 12 feet high, consists of a number of fibrous sheaths that may be considered the continuation of the leaf-stalks, and is at the base nearly a foot thick. The leaves, forming a tuft on the apex of the stem, are 6 or 8 feet long and 2 feet broad. In the centre of the stem is a white solid substance, forming a cylinder throughout its length. It is used by the natives for curry. When broken across, it shews bundles of spiral vessels to great perfection. The continuation of this cylinder beyond the stem forms the flower-stalk, it is therefore evident that one tree can bear but once, after which it is cut down and a new shoot springs up from the root, by which means the plantain is chiefly propagated. The closely packed conical flower-head is not unlike a red cabbage in appearance, and by its own weight inclines downward in a graceful curve. Each of the purple leathery leaves or involucres, coated with a pale bloom of great delicacy, covers a double row of 9 or 12 elongate yellowish red flowers, extending in a spiral line over one-third of the circumference of the fleshy stalk. With the maturity of each successive row of flowers, the involucre reclines and falls off, and the fruit appears, which when ripe is from 3 to 6 inches long and from half an inch to 2 inches thick. In its spiral clustering round the stalk it forms a large bunch, numbering from 200 to 300 plantains. The fruit, when divested of its skin, may be eaten raw, roasted or baked; or when sliced and dried in the sun, it may be reduced to a kind of flour, which is considered very nourishing.

The fruit is supposed to have been the forbidden fruit of Paradise, hence the botanical name of the plant. There is a great variety of plantains, which differ in size, colour and the flavour of their fruit, but all the Coorg plantains seem to be particularly rich in saccharine matter and very nutritious.

The plant is highly esteemed by the natives as the emblem of plenty and fertility, and as such is in constant requisition at their marri-

age and other festivals for ornamenting the entrances of houses and temples. Stumps of large trunks also occupy a conspicuous place in their games and amusements, for it is considered a feat of strength to cut one through at a blow with the famous Coorg knife.

The Manilla Hemp Plantain (*musa textilis*) was introduced by Major Cole, and has been successfully naturalized in Mercara. Numbers of shoots have been distributed for extensive cultivation, for the sake of its valuable fibre which is suited for cloth and paper manufacture. The fruit is like the common large plantain, but so full of seeds that it can hardly be eaten.

Rheea.—Along with this plant the Rheea or Assam Nettle (*Boehmeria nivea*) was also introduced, and Mr. Richter having successfully reared it in Mercara, distributed a quantity of roots and cuttings amongst the planters all over Coorg, who find it thriving very well in their sheltered ravines without any further care, but do not yet see how to make the cultivation profitable, owing to the difficulty and expense in preparing the fibre. The plant is indigenous to south-eastern Asia and is known in China as Ma or Chuma, and in Assam as Rheea. It is an herbaceous plant, with large perennial spreading and much divided roots, from which rise a number of straight slender slightly branching stems, from the bark of which the fibre is extracted. The leaves resemble those of the nettle, being light green on the surface and silvery white below, but are not stinging. The male and female flowers being separate, and situated on different parts of the stem, the production of seed is uncertain.

From data given in the December number of the Calcutta Review for 1854, the Rheea is propagated either by dividing the roots or by cuttings. The plant is exceedingly hardy and thrives in almost any description of soil, but to have it grown to perfection, the land must be well manured and capable of irrigation. In planting a piece of ground, the roots or cuttings should be placed out in rows a foot or a foot and a half apart each way, so that the plants do not throw out too many lateral shoots, which impairs the height of the stems. When once the roots have firmly struck, the plant grows vigorously, but more especially during the rainy season. The first principal shoots burst from the centre of the root, and are quickly followed by exterior ones. In two months may generally be expected, especially upon well manured land, the first cuttings, which must be taken off about an inch above the root. It is essential to mind that the plant does not become covered

with hard or woody bark, which is indicated by the former green coating turning brown, the discoloration commencing at the stem. A little browning strengthens the fibre, too much imposes additional costly labour. It requires a little experience to ascertain clearly the requisite time for cutting. There is another criterion by which the fitness of the plant for cutting may be known, by passing the hand down it from the top to the bottom; if the leaves break off crisply from where they are joined to the stem, it is a good indication that the plantation may be thinned out. If on the contrary, the plant be not ready, the leaves, instead of breaking, tear off and strip the stem of the fibre. When all is ready for removing the stalks, cutting more than can be immediately attended to should be avoided. When the sticks are cut, they should be stripped of the leaves on the ground, which is done by passing the hand down them from top to bottom, after which they are handed over to women or boys to be treated as follows:—

The workers should be in couples, one to take off the bark or thin outer coat, the other to strip off the fibre. The barker being provided with some coir fibre and a wooden knife, proceeds with the former to rub the stick in one direction, from top to bottom, or *vice versa*, which if the plant be fresh, is easily accomplished; if the bark be obstinate, she uses the wooden knife, scraping in one direction, when the fibre is thoroughly exposed. After removing the bark, she hands the stick to the other cooly, who breaks it an inch or two at either end or in the middle, by which a portion of fibre is separated and which enables him to lay hold of it and to strip off very carefully the entire fibre. Should any mucilaginous matter still adhere, it is scraped off with a blunt wooden knife, and the clean fibre hung up in the sun for a day to dry, when it is ready for the market. Perhaps drying the cut sticks in the sun, exposing them to the dews for several days, and then beating out the brittle herbaceous part with a wooden apparatus, as they treat hemp in Germany, might be a cheaper and more expeditious mode of separating the fibre.

As to the return, 88 lbs. are calculated upon one acre for one crop, and if the field allows three annual cuttings, the yield is 264 lbs. or a little more than one-tenth of a ton, the value of which would be 80 rupees at £ 80 a ton; whilst an acre of coffee producing 5 cwt. would yield, at 70 shillings per cwt., 175 rupees; all expenditure excluded in both cases.

Chocolate.—The chocolate tree (*theobroma cacao*) was successfully reared by Mr. Richter from seeds received from Sir Madhava Rao, when Devân of Travancore. The cultivation of this most useful tree, which requires a soil fit also for coffee, promises to prove a most welcome addition to Coorg exotics, as it produces fruit when 5 years old and requires but little care or labour. The plants are grown from seed, to be obtained in March, much in the same way as coffee seedlings, and after 15 months, when they are about 18 inches high, they are transplanted into large pits about 12 feet apart, and protected by shade.

Nutmeg.—The fact that a wild species of nutmeg grows plentifully in the Coorg forests, should be encouraging to attempt the cultivation of the nutmeg of commerce (*myristica officinalis*). According to Dr. Bidie's instructions, the cultivation may be carried out on coffee-land and seems to offer no great difficulties.

Fruit trees.—The Coorg oranges are celebrated, and as common as the plaintain. There are several varieties, but the best is the sweet luscious Loose Jacket, so called because the rind of the ripe fruit is almost detached from the pulp. The Coorg Rajas owned fine orange gardens in the most suitable localities of the country, but they have since been neglected. There are also varieties of citrons, and the lime—indispensable in Coorg etiquette—is in abundance.

Apples and pears do not succeed in Mercara, as the heavy monsoon does not favour their growth, but there is perhaps no reason why they should not grow in warmer and more sheltered localities as well as in Bangalore. Loquats, peaches, figs and pomegranates thrive better; and the guava, which makes a most excellent jelly, would be the Coorg pear, if it were not for the numerous hard little seeds and the peculiar flavor, which is not always appreciated. Strawberries and pine-apples grow to a large size. Grapes have been reared in sheltered places in Mercara, but the vine soon degenerates. The Brazil cherry is very common, the fruit is the berry of an herbaceous plant and is made into excellent jam.

Vegetables.—English vegetables are satisfactorily grown by Mercara residents and still more so by some Planters on their estates. Potatoes and cabbage thrive remarkably well: also peas, beans, knoll kohl, salad, beets, turnips and carrots are produced of excellent quality. The natives are making attempts to cultivate these vegetables, but the markets are unsupplied with them.

Native vegetables are reared on patches of paddy fields after harvest time, or in small gardens in the villages about Fraserpet. They include French beans, radishes, pumpkins, cucumbers, Indian corn, brinjals, chillies, coriander, amaranthus and others; but even these are not plentiful in the Mercara market, and what there are come chiefly from Fraserpet.

Dry grains.—Dry grains such as ragi, avare, tavare, hurali and others are chiefly grown in the open country of the Nanjarájpatna taluk, lying along the western banks of the Kávéri. It is there also that tobacco is cultivated for sale, whilst in most of the Coorg farms the narcotic is grown in little reserved patches for home consumption. But the Coorg tobacco is of an indifferent description, no particular care being bestowed upon its cultivation: the introduction of new seed would have a beneficial influence. A few hemp plants are here and there grown near native houses, but more for the use of smoking the intoxicating leaves than for the sake of the fibre.

As in other hilly parts of India, there prevails a primitive mode of cultivation called *kumari*, which is practised by the lowest classes of natives, the Kurumbas and Kudias, chiefly on the western slopes of the Ghats. They cut down and burn a patch of jungle, and plant it with either the small reddish hill-rice, sown broadcast upon the slightly dug up land, or with ragi. The former yields a 10 fold, the latter a 200 to 300 fold return. Such fields are only once or twice cultivated, when they are abandoned in favour of a new piece of jungle, and not resumed till after 5 or 6 years. This wanton jungle waste has however been put a stop to by Government and the cultivation brought within reasonable limits.

Bringing to a close the subject of arbori-horti-culture in Coorg, it were ungrateful to omit mention of the many and beautiful exotic flowers and shrubs that ornament the gardens of European residents, and recall by their presence sweet remembrances of distant Home. Suffice it however to enumerate the modest violet, the fragrant rose, and the showy dahlia, and leave it to the fancy of the reader to associate with these types of spring, summer and autumn the many other garden flowers that are familiar to Europeans

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