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*Proceedings of the Madras Government, Public Department,
27th March 1868.*

No. 195. Read the following letter from the Commissioner for investigating the ravages of Borer in Coffee Plantations of Mysore and Coorg, to the Chief Secretary to Government, Fort Saint George; dated Sucklaspoor, 7th March 1868, No. 29.

I have the honor to send herewith, for the information of the Government, copy of a monthly report of progress forwarded by me to the Commissioner for Mysore and Coorg.

From the Commissioner for investigating the ravages of Borer in Coffee Plantations of Mysore and Coorg, to the Secretary to the Commissioner of Mysore and Coorg; dated Sucklaspoor, 6th March 1868, No. 26.

I have the honor to send, for the information of the Commissioner, report of progress for the month of February.

2. In obedience to instructions contained in the letter marginally noted, I visited the district near Santacoope in which so many sandal-

Your's, No. 4357-592, dated 6th November 1867, to my address.

wood trees have died. I was surprised to find the tree so abundant there, its favorite place

of growth being the tract immediately to the east of the teak zone, where the jungle is a low open scrub, the elevation a little over 2000 feet, and the rain-fall from 30 to 40 inches. At Santacoope the elevation is about 3000 feet, the rain-fall probably about 60 inches, and the sandal associated with trees requiring more moisture, and generally occupying a different region, such as the kino tree, ben-teak, blackwood, and terminalia coriacea. The tract in which the sandal has died sweeps round from Hallery by Santacoope, Cotacadoo and Boikerry being immediately to the east of these places, and from one to two miles in breadth. Other trees, such as the kino tree and ben-teak have also died there, and as these were in their natural locality and are very hardy, there must have been some potent general cause in operation in the quarter. The sudden appearance of the mortality, and the fact that the same species of trees as those now dying have flourished there from time immemorial, preclude the idea of the cause having any connection with the nature of the soil, while a careful examination of dead trees showed them perfectly free from any disease. Some stems have been found tunnelled by a Borer, and some roots attacked by white-ants, but I believe that in every instance these insects have committed their depredations after the death of the tree. We have no alternative, therefore, but to infer that the trees must have perished through some abnormal condition of climate. It is hardly necessary to say that here, as elsewhere in Southern India, the seasons for some years past have been unusually hot and dry, but I do not think these climatic changes would have killed so many trees of natural growth; and, besides, if they had been the sole cause of the mortality they ought to have operated over the whole province wherever the same kinds of trees grow, instead of confining their effects to a circumscribed locality. It seems necessary to conclude, therefore, that the change must have taken place in local climate, and there is nothing whatever in the district to account for this, save the extensive clearings which have been made of late years on the estates of Hallery, Santacoope, Cotacadoo and Boikerry. The heights which these now occupy were formerly clothed with dense forest, which would retain and give off gradually the rain-fall, and render the air both moister and cooler in the neighbourhood during the dry season. The tract in which the trees have died forms a fringe on that side of the denuded heights to which their drainage descends, so that the trees growing there must now, during the monsoon, receive much more moisture than they were wont to do; while, on the other hand, during the dry season they will have to bear a heat and drought excessive and unusual. The sandal is a tree that, under ordinary circumstances, will thrive in situations extremely hot and dry, but speedily succumbs if at one period of the year it is deluged with moisture, and at another subjected to intense heat and drought. The changes, therefore, in local climate and drainage that have taken place about Santacoope seem quite sufficient to account for the death of so many

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sandal-wood trees in that district. The trees that have perished have mostly been very young, or those that have grown too rapidly to permit of the proper development of the dense, fragrant heart-wood, and this is exactly what might have been expected, as such would of course be the most delicate.

3. With a view to the completion of my report on the effect of the destruction of forest in Coorg, I considered it necessary before leaving the province to inspect the catchment basin of the head waters of the Cauvery, and to see as much of the forests on both sides of the ghauts as possible. I accordingly proceeded, *via* Moornaad and Beppnaad, to the old palace of Nalkanaad, and thence to Bangamungalum and Tulla Cauvery. The bridle-path from Beppnaad to Nalkanaad runs nearly parallel with, and at a short distance to, the east of the mountain masses that here form the crest of the ghauts, and passes over a succession of low hills or spurs running out from these in an eastern direction, with intervening deep set narrow valleys that have with great care been converted into rice fields. The flanks of the main chain are covered to a considerable elevation with dense forest, and the low hills that run out from it are also for the most part under-wood, in the shade of which Coffee is grown to a large extent by the Coorgs. Some of the gardens contain plants upwards of 20 years old, and are evidently highly remunerative; for although the crops are small, as compared with those got from trees in the open, the expense of culture is very trifling, the gardens receiving little or no attention beyond having the weeds cut down once or twice a year. I regret to say that here also the Borer has been busy at work, destroying every plant which, from the death or destruction of the neighbouring shade trees, has become exposed to the sun. Indeed trees originally under shade appear, on losing that protection, much more liable to be attacked by the insect than those cultivated throughout in the open. On the whole, however, the Coffee in this district is looking well, and although many of the plants even in shade are bored, the conditions under which they live there appear to enable them to resist the effects of the injury better than when growing in open ground; and should the pest cease, I have no doubt many of the tunnelled trees will ultimately recover. From Nalkanaad I ascended the high hill in the rear of the palace, and went north-west along the crest of the ghauts, from which a magnificent view is obtained of both flanks of the chain. The forests on the western slopes ascend higher than on the eastern, and are for the most part occupied with Cardamom gardens. The supply of that spice has of late become so diminished by the clearing away of the forests in which it used to grow, and the price consequently so enhanced that Cardamom cultivation may, ere long, become quite as remunerative as that of Coffee. The crests of the ghauts are for the most part covered with a coarse tufted grass, which is burned annually, with the effect of bringing up soon tender young pasture, and it seems also to keep these tracts clear of jungle, as I noticed that all seedling shrubs and trees which had sprung up during the year had been killed by the fire. Returning to Nalkanaad I rode from there towards Bangamungalum, up the basin of the Cauvery, a distance of sixteen or eighteen miles. For the first eight or ten miles the country was much the same as that beyond Nalkanaad, the wooded spurs being mostly occupied with Coffee gardens, and the intersecting valleys under rice culture. Here in complete shade too the Coffee looked generally healthy, but wherever a considerable opening allowed the sun's rays to steal in, the whole of the trees had succumbed to the Borer. Within five or six miles of Bangamungalum the country becomes comparatively level, consisting of a circular undulating plain about five miles in diameter, studded here and there with clumps of trees, and clothed with a splendid carpet of short green grass. This is the cradle of the great Cauvery, and is surrounded to the north-west and south by a semi-circular chain of lofty mountain masses, completely destitute of forest, except here and there in some narrow ravine, channelled out by a mountain torrent. I was surprised to find along the centre of the plain several plants, such as the *Butea frondosa* and *Cassia fistula* belonging to the Mysore flora. The absence of anything like dense or continuous forest throughout the whole of this basin is very remarkable, and must have the effect of sending down the rain-fall there into the river with great precipitancy. From the centre of the surrounding circle of hills a spur runs out for a short distance to the east and towards the centre of the basin, and at the end of this, immediately above the junction of the Cauvery and Kannikay

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streams, stands the village of Bangamungalum, to which thousands of pilgrims resort during the great Tulla Cauvery feast in October. At the east end of the village there is a large quadrangular temple, roofed with copper put on in small pieces like slates, and in one corner of the enclosure I found a fine specimen of the magnificent Burmese plant, the *Jonesia asoca*, all ablaze with its orange blossoms, and evidently regarded with great veneration by the guardians of the place. I spent the night at Bangamungalum, in the verandah of the little straw-roofed Cutcherry, and at day-break started for Tulla Cauvery, the spring from which the river takes its rise. The road, a mere foot-path, leads over the shoulder of the spur, at the end of which the village stands and is very steep and rough. About two miles beyond Bangamungalum I saw a Native Coffee garden of considerable extent in the open, evidently infested with Borer, and greatly scorched by the east wind. After a tiresome walk of five miles the sacred fountain was reached, and I looked with pleasure on the little rill that afterwards expands into the great river, converting barren wastes into gardens, and providing food for thousands of the population as it travels to the sea. On the slope behind the spring there is a small temple, and the water rises up first into a store basin, a few feet square, then passes into a stone-built tank in which the pilgrims bathe, and after that runs down into a shallow wooded ravine. In the month of October, when the great feast takes place, the water in the little basin is said to bubble and overflow, and the Brahmins predict the day and hour at which these phenomena are to take place. Europeans are not permitted to approach within the sacred enclosure, so I had no opportunity of examining the spring, but it seems highly probable that the commotion in the well is produced by a stream of water being poured down at the appointed time through a subterranean channel, leading from the temple to the fountain, the former being at a considerable elevation above the latter. A few yards to the west of the temple the crest of the ghauts is reached, and a fine view obtained of the Malabar country, right away to the sea. Some two miles to the south-west, on the western slope of the chain, a Brahmin has a Coffee estate of considerable size, all in the open, but the plants did not seem to be thriving, and must suffer greatly from the violence of the south-west monsoon. Returning to Bangamungalum I proceeded to Mercara, a ride of twenty-five miles, skirting the base of the bold hills that run towards the upper end of the Sumpajee pass. On the way I saw a great many Coffee gardens, all in shade, and found the Borer busy as usual wherever there was a sunny opening. From Mercara I again proceeded down the Sumpajee ghaut and found the Coffee on some of the estates there suffering very much from the dry east winds. Large patches were completely shorn of their foliage, and if rain does not fall soon a good deal of the young wood must perish. Some of the trees that suffered much from Borer last year have borne a good crop, but many of them will doubtless die before the monsoon. In my last letter, I mentioned that the Borer had appeared in very young Coffee on an estate in South Coorg. Since then it has shown itself on another in that quarter, in which the plants were put down in July 1866. About one per cent. has been killed, and the Superintendent of the property reports that the pest is on the increase. On another estate, in West Coorg, the owner discovered a large patch in which the Coffee, not yet two years' old, had perished from Borer. I examined a number of the deal plants with him, and found that the insect had confined its operations to the lower five or six inches of the stem, and had been most destructive at the neck of the plant, there being in some cases nothing left there but a thin shell of wood and the bark. The insect was found in all stages of its existence, and as many as six were taken out of a stem not thicker at the base than the ring finger. As a rule, the Coffee in Coorg comes into blossom in March or April, but this year the rain in January caused about one-half of the buds to expand into flower in that month, and although the greater portion of this has set, there is reason to fear that much of the young fruit will perish, unless the parched trees are stimulated with rain during the present month.

4. From Coorg I proceeded to Munzerabad, a distance of 60 miles, by the Hallery and Somwarpet route, a very fair dry weather road. After crossing the Hully Hulla river the country changes in its aspect, consisting of a succession of rugged steep hills, with great scarps of bare rock, bearing but a few stunted trees, and disposed in the most irregular manner. From the river to Somwarpet, a distance of seventeen miles, the road passes through close bamboo jungle, interspersed as usual with mutti, honne, ben-teak, and other useful timber trees. About Jumboor the

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sandal-wood is common; coming up the valley of the Madhapoor Hulla river, and near the ford, I saw several tamarind trees, a rare sight in Coorg. All about the village of Somwarpett I found a number of Native Coffee gardens without shade, in which the whole of the trees had been killed by Borer. About a mile beyond it there is a very large garden in the shade of lofty somewhat open jungle, where the Coffee has been cultivated with great care by the Native owner. The plants are very fine for their age and generally healthy, but wherever the shade is deficient are either dead or dying from Borer. Four miles to the north-west of Somwarpett lies the estate of Allaycuttay, the only one in North Coorg belonging to an European owner. The Coffee on it was planted in the open, but during the last two years trees springing up spontaneously have been allowed to grow, and the whole place will shortly be under very good shade. Proceeding from Somwarpett to Sanevarsuntay, the country gradually gets opener, there being long stretches of low rounded grassy hills covered with good pasture, and producing numbers of the little stemless date palm. Three miles to the south of Sanevarsuntay, and just beyond the Coorg boundary in that direction, there is an estate originally chiefly in the open, but on which shade trees are now being industriously encouraged, with the view of saving the Coffee from the ravages of Borer. Six miles to the west of this, on the northern aspect of a range of rocky hills covered with scrub jungle, are three other small estates belonging to the same owners. The Coffee on these looks very promising, and where the jungle has been cut down shade, consisting chiefly of the charcoal tree and wild plantain, is being raised. Bears are very plentiful in this neighbourhood, and seem to take a malicious pleasure in scraping holes in the bridle-paths leading from one estate to another through the jungle. Fresh traces of Bison were also observed. The flora about Sanevarsuntay is almost identical with that of Western Mysore, the characteristic trees being Sandal, Terminalia, Butea frondosa, Conocarpus latifolius (Dindul), Teak, Wild Mango, several species of Ficus, &c. Between Sanevarsuntay and Sucklaspoor, about twenty-six miles, the country is very beautiful, in fact like an English park on a gigantic scale. On both sides of the road the landscape displays a succession of rounded grassy hills studded with large solitary trees, and between the hills run winding valleys full of forest, which here and there in verdant promontories steals up the neighbouring slopes. On the way to Sucklaspoor I visited several estates, and amongst the rest one in which the coffee was planted about twenty-five years ago under the shade of the original forest. The plants in it are very high, strong, and umbrella-shaped, yield fair crops, and look as if they were able to go on bearing for another quarter of a century. On the estates that I have seen up to date in Munzerabad the Coffee has been chiefly cultivated under shade, and comparing the present state of such with that of those in their neighbourhood in the open, no one can help feeling that shade at any rate, in this part of the Coffee districts, ensures a great degree of protection from the ravages of the Borer. I trust to be able in my next report to communicate further information on this highly important and interesting subject.

No. 196.

ORDER THEREON, 27th March 1868, No. 394.

To be recorded.

(True Extract).

R. S. ELLIS,
Chief Secretary.

Exd. J. Tulloch.

No 29

*Office of the Commissioner for
investigating the ravages of Borer*

From

*The Commissioner for investigating
the ravages of Borer in Coffee Planta-
-tions of Mysore and Coorg -*

To

*The Chief Secretary to Government -
Fort St. George*

Dated Sucklaspoor 7th March 1868

Sir

*I have the honor to send herewith for the in-
-formation of the Government copy of a monthly
report of progress forwarded by me to the Commissioner
for Mysore and Coorg -*

I have the honor to be

Sir

Your Most-Obedient Servant

H. R. Ellis

*Commissioner for investigating the
ravages of Borer -*

No 7 March 1868 No 44 5745

To the
Honble Secy of War

The Commissioner for
investigating Patents
of War
to the Chief Secretary to
Government.

Dated 27th March
1868

No 44 5745

Monthly report of progress
forwarded to the Commissioner
of War and Corp.

27 March 1868 No 44 5745

Recorded

WM L. A.

Cy to the Secy of War
(not known to Secy of War)

C19 March
1868

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