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MADRAS RECORD OFFICE

GOVERNMENT OF MADRAS

Revenue DEPARTMENT

G.O. No.

1715

Press

~~B.P. No.~~

~~Mis.~~

Dated

30. 11. 1875 196 .

Not to be folded or roughly handled

No. 337. Read the following Proceedings of the Board of Revenue, dated 15th October 1875, No. 2,875:—

Read the following letter from J. R. COCKERELL, Esq., Commissioner of the Nilgiris, to H. E. STOKES, Esq., Acting Secretary to the Board of Revenue, dated Ootacamund, 25th September 1875, No. 104.

PROCEEDINGS of the Board, No. 1,075, dated 29th April 1875, forward me for answers a set of questions proposed by Mr. Thwaites of Ceylon with reference to the leaf-disease in coffee.

2. Mr. McIvor, the Superintendent of Cinchona Plantations, who possesses coffee estates at Kartairy and Hoolicul, writes that the estates were opened in 1842, and that leaf-disease has pervaded them for the last twenty-six years. I forward specimens of affected leaves which he has submitted to my office. He states the spots on their first appearance are minute and scarcely distinguishable, but ultimately the leaf becomes covered with yellow blotches of a distinct bead-formed fungus, arranged in intricate lace-like patterns. As the fungi mature, they become full of yellow spores, easily rubbed off, insomuch that a person walking through a field of infected coffee becomes covered with yellow dust. Wind raises clouds of the spores.

3. The trees apparently recover from the disease in the spring of the year, and throw out fresh foliage, which, in its turn, is attacked. The disease appears in all soils and exposures. It does not appear to be in any way affected by seasons. If the disease is bad, the crop is materially reduced. Coffee on diseased trees is imperfectly formed, and the berry has frequently no kernel, though to the eye it appears plump and fully developed.

4. Mr. McIvor does not know the origin of the disease, and is acquainted with no practical remedy. The spread of the disease is easily accounted for by wind and the carriage of the spores by persons passing through the coffee.

5. Mr. McIvor has not observed the disease on any plants but coffee. Manure stimulates the plants and makes them throw out fresh leaves, but does not arrest disease. Carbolic acid and sulphur cause the fungus to shrivel, but the practical application of these remedies over large areas is impossible. Kartairy is not a rainy quarter of the Hills. It is only open to the north-east monsoon, and receives, say, sixty inches of rain per annum.

6. Mr. Wapshare, the agent of Mr. Ouchterlony in the Ouchterlony Valley, containing 5,000 acres of coffee, states that the disease appeared in the valley in 1873 and attacked the "chic" trees only. These trees, at the best, yield but little produce, and the object of the planter should be to get rid of them. The rain-fall in the valley averages 150 inches. Mr. Wapshare finds close root-pruning, followed by manuring, strengthens the tree and checks the disease.

7. The estates of Messrs. Stanes, Streton and Reilly are in the Coonoor Ghaut, where the rain-fall averages 60 inches, well distributed. The disease has appeared in this quarter only within the last few years, and is found to be controllable by high cultivation. The impression here is, that it is fostered by deficient moisture and appears chiefly on exposed parts of estates.

8. Mr. Higgins, whose estate is at Thaymullay, a dry quarter, finds the disease capricious, appearing on exposed ridges and in hollows. It attacks the trees in the wettest months. High cultivation checks it.

9. The estate of Mr. Cockburn is at Kotergherry. The disease here is arrested by high cultivation. Mr. Cockburn states he has seen the disease on "one jungle tree" as well as on coffee. Mr. Sherman, whose property is in the same quarter, thinks he has seen the disease on the custard-apple tree.

10. General Morgan thinks high cultivation checks the disease.

11. With these remarks, I have the honor to submit the replies I have received. It will be observed that no accurate observations have been made on the cause and progress of the disease, calculated to lead to scientific results.

12. I have made constant inquiries on this subject in person, since my appointment to the Hills, and have formed an impression that the disease appears chiefly in spots where the tap-roots of the trees have run down to a cold clay soil. An apparent remedy in these cases has been deep draining and manure, to give strength to the tree.

ENCLOSURE No. 1.

From W. G. McIVOR, Esq., Superintendent of the Government Cinchona Plantations, to J. R. COCKERELL, Esq., Commissioner of the Nilgiris, dated Ootacamund, 14th August 1875, No. 93.

With reference to your docket of the 2nd June 1875, I have the honor to submit the following observations on the questions submitted with reference to "leaf-disease" in Coffee.

2. In reply to question No. 1, I would remark that on the Hoolicul and Kartairy Coffee Estates, where the trees were planted in 1842, the leaf-disease has been observed for more than twenty-six years, but only in the last two years it developed to so serious an extent as to cause anxiety.

3. Question No. 2.—The spots or blotches, on their first appearance, are minute and difficult to be distinguished as at Specimen No. 1. Ultimately, the leaf becomes covered with yellow blotches of a distinct bead-formed fungi, arranged upon the leaf in intricate lace-like patterns; as this fungi advances to maturity, the bead-like formations become full of yellow spores easily rubbed off, so that a person walking through a piece of infected Coffee is covered with this "yellow dust" (spores of the fungus). In dry weather heavy gusts of wind often raise a visible cloud of these spores from effected trees.

4. Question No. 3.—The trees rapidly recover from the disease in the Spring of the year, and throw out fresh foliage which, in its turn, becomes more or less infected. On portions of the estate which had suffered seriously for the last two years the plants seem now to be more healthy.

5. Question No. 4.—The disease at Hoolicul and Kartairy has been observed for upwards of twenty-six years, but only developed to an alarming extent within the last two years, when it has spread more or less over the whole extent under cultivation.

6. Question No. 5.—The disease has appeared on all soils and exposures. Last year was exceptionally wet, and the disease was very bad. This year is unusually dry, and the disease is equally bad.

7. Question No. 6.—On the Kartairy Estate the average yield for the last fourteen years has been about 7 cwt. per acre; during the last year the disease has reduced the yield to 3 cwt. per acre. The berries on the diseased trees are imperfectly formed, and although to external appearance fully developed have frequently no kernel.

8. Question No. 7.—I have examined the blotches under the microscope. Treated them with different preparations, but have not been able to trace any indication of a practical remedy. How the disease has been introduced is involved in obscurity. The condition which has caused

its development to such an alarming extent seems a still more difficult question. The spread of the disease is easily accounted for. The spores carried by the wind and adhering to laborers and animals passing through the Coffee accounts for the germs being spread.

9. Question No. 8.—I have not observed the disease on any other plant.

10. Question No. 9.—Portions of the estate affected with disease have been heavily manured and the ground littered with a fern and lemon grass with good results. These applications stimulate a new flush of leaves, but apparently has no effect upon the disease. An application of strong carbolic acid to the tissue of the fungus causes it to shrivel up and change its texture. Applications of sulphur has a similar effect, but the practical application of such remedies become impossible; I therefore believe considerable difficulty exists in discovering any application calculated to destroy or retard the spread of this disease.

11. I enclose samples of leaves exhibiting the disease in different stages: No. I. being the upper and lower side of two leaves from a diseased tree in the first stage; No. II. exhibits the disease in its further advanced stage; No. III. the disease covering the upper and lower surfaces of the leaf; No. IV. illustrating the leaf in its diseased and shrivelled condition prior to falling from the tree.

ENCLOSURE 1 in No. 6.

From Dr. G. H. K. THWAITES, to the Honorable the Colonial Secretary, dated Royal Botanic Gardens, Peradeniya, 6th October 1874.

In complying with the request conveyed to me in your letter of the 22nd ultimo, I have the honor of handing you the questions I would suggest being sent to Her Majesty's Consuls or to other officers residing in countries where the Coffee tree is cultivated to any extent.

I would also take the liberty to recommend that instructions be given that, when answers are sent to these questions, there should be forwarded with them dried specimens of stem or foliage, illustrating the character of the disease.

Information respecting any other diseases affecting seriously the Coffee or any other plants of economic importance might also be asked for, and specimens of the same forwarded to the Colonial Office.

In all cases, it would be particularly desirable that, whether the injury to the plant result from the attacks of fungi or from those of insects, good examples of these pests should be sent for identification.

It may, perhaps, not be considered irrelevant my remarking that, according to my experience, the obtaining such information as is desired from parties interested in the cultivation, is frequently attended with some difficulty, owing to an unwillingness on their part to acknowledge there may be any probability of the quantity or quality of their crops being seriously affected.

Extract from Dr. J. D. HOOKER's letter, dated Kew, 23rd December 1874, regarding the preparation of Specimens.

THESE leaves should be carefully pressed flat between sheets of paper, and, when dry, sent Home in this state; also between pieces of paper. Short pieces of the wood with the bark on, or twigs, if these are affected, should be gently dried, and also sent Home, carefully wrapped up in soft paper. All such specimens should be ticketed with any observations as to the age, size, condition, &c., of the plants from which they were taken.

FORWARDED to H. Wapshare, Esq., with the request he will favor the Commissioner with answers to the queries on the reverse; at the same time, forwarding specimens prepared in accordance with instructions.

(Signed) J. R. COCKERELL,

Commissioner.

2nd June 1875.

ENCLOSURE 2 in No. 6.

Questions.

HAVE the cultivated Coffee trees in Ouchterlony Valley been observed to be affected by a disease which causes their leaves to become, at certain times and somewhat rapidly, marked with yellow spots or blotches, these leaves soon afterwards falling prematurely leaving the branches of the trees quite bare or with only the unripe berries upon them?

2. Are the spots or blotches on the underside of the affected leaf covered, upon their first appearance, with dust of a pale orange color easily rubbed off?

3. Do the trees seem to recover altogether from the disease, and then, after a certain period, exhibit all the previous symptoms of being infected by it?

4. When was the disease first observed in the Valley, and was it then confined to a particular locality, or was it spread over a large area?

5. Has it been observed under what conditions as regards climate, soil, or exposure, the disease prevails more or less, and has it shown itself with much greater severity in some years than in others, and have these years been exceptionally wet or dry?

6. Has the disease been found to seriously diminish the amount of crop, and has the quality of the berries been injuriously affected by it?

7. Have any investigations been made, with the help of the microscope, into the nature of the disease, its mode of propagation, and how it is introduced into the Coffee plant; and, if so, what has been the result of these investigations?

8. Have any other plants besides the Coffee been found to be infested with this identical disease, as determined by the microscope?

9. Has any particular treatment as regards the manuring or littering of the Coffee trees or the application to them or to the soil in which they are growing of any mineral substances, such as sulphur, been found effective in curing the disease or in mitigating the severity of its periodical attacks?

Answers.

THE Chic Magalore tree is the only kind of Coffee tree in the Ouchterlony Valley which has been attacked by leaf-disease, i.e., which have had the leaves marked with yellow spots or blotches. All affected leaves drop, but in the Valley I have never seen the branches left bare.

Yes.

The trees after being affected throw out new foliage; and they again exhibit all the previous symptoms.

The disease showed itself at the end of the South-West Monsoon of 1873; it was not confined to a particular locality, but to a particular class of tree as above stated; whereas one of these trees grew although altogether isolated and a mile away from others of its kind, it was invariably affected; but not a sign of the disease was on the proper kind of tree surrounding it.

Climate, i.e., elevation, soil, or exposure, in my opinion, makes no difference; the disease appears to me to be getting worse and worse.

The kind of tree that is attacked by the disease yields little or no crop, but the little crop they do bear has undoubtedly been injuriously affected.

No investigations have been made.

I have seen no other plant infested by this disease.

Close root-pruning followed by manuring strengthens the tree, and there is little or no disease on trees thus treated.

(Signed) HENRY WAPSHARE.

I cannot send a specimen leaf, as the disease has not yet showed itself this year.

ENCLOSURE 1 in No. 6.

from Dr. G. H. K. THWAITES, to the Honorable the Colonial Secretary, dated Royal Botanic Gardens, Peradeniya, 6th October 1874.

In complying with the request conveyed to me in your letter of the 22nd ultimo, I have the honor of handing you the questions I would suggest being sent to Her Majesty's Consuls or to other officers residing in countries where the Coffee tree is cultivated to any extent.

I would also take the liberty to recommend that instructions be given that, when answers are sent to these questions, there should be forwarded with them dried specimens of stem or foliage, illustrating the character of the disease.

Information respecting any other diseases affecting seriously the Coffee or any other plants of economic importance might also be asked for, and specimens of the same forwarded to the Colonial Office.

In all cases, it would be particularly desirable that, whether the injury to the plant results from the attacks of fungi or from those of insects, good examples of these pests should be sent for identification.

It may, perhaps, not be considered irrelevant my remarking that, according to my experience, obtaining such information as is desired from parties interested in the cultivation is frequently attended with some difficulty owing to an unwillingness on their part to acknowledge there may be any probability of the quantity or quality of their crops being seriously affected.

Extract from Dr. J. D. Hooker's letter, dated Kew, 23rd December 1874, regarding the preparation of Specimens.

These leaves should be carefully pressed flat between sheets of paper, and, when dry, sent home in this state; also between pieces of paper. Short pieces of the wood with the bark on, or barks, if these are affected, should be gently dried, and also sent Home carefully wrapped up in soft paper. All such specimens should be ticketed with any observations as to the age, size, condition, &c., of the plants from which they were taken.

FORWARDED to T. Stanes, Esq., with the request he will favor the Commissioner with answers to the queries on the reverse; at the same time, forwarding specimens prepared in accordance with instructions.

(Signed) J. R. COCKERELL,
Commissioner.

2nd June 1875.

ENCLOSURE 2 in No. 6.

Questions.

HAVE the cultivated Coffee trees in the Ouchterlony Valley been observed to be affected by a disease which causes their leaves to become, at certain times and somewhat rapidly, marked with yellow spots or blotches, these leaves soon afterwards falling prematurely, leaving the branches of the trees quite bare or with only the unripe berries upon them?

2. Are the spots or blotches on the underside of the affected leaf covered, upon their first appearance, with dust of a pale orange color, easily rubbed off?

Answers.

Yes. First about three years ago.

*Proceedings of the Madras Government, Revenue Department,
30th November 1875.*

3. Do the trees seem to recover altogether from the disease, and then, after a certain period, exhibit all the previous symptoms of being infected by it?

Yes.

4. When was the disease first observed in the Ghaut, and was it then confined to a particular locality, or was it spread over a large area?

The disease is generally confined to ridges and poor soil.

5. Has it been observed under what conditions as regards climate, soil, or exposure, the disease prevails more or less, and has it shown itself with much greater severity in some years than in others, and have these years been exceptionally wet or dry?

Chiefly in dry weather and about the months of February and March.

6. Has the disease been found to seriously diminish the amount of crop, and has the quality of the berries been injuriously affected by it?

Decidedly.

7. Have any investigations been made, with the help of the microscope, into the nature of the disease, its mode of propagation, and how it is introduced into the Coffee plant; and, if so, what has been the result of these investigations?

From careful investigation with a powerful microscope, I am of opinion it is a fungus produced by the state of the atmosphere and the want of certain alkalines in the soil.

8. Have any other plants besides the Coffee been found to be infested with this identical disease, as determined by the microscope?

I don't know.

9. Has any particular treatment as regards the manuring or littering of the Coffee trees, or the application to them or to the soil in which they are growing of any mineral substances, such as sulphur, been found effective in curing the disease or in mitigating the severity of its periodical attacks?

High cultivation, i.e., manuring with Cattle manure.

3rd August 1875.

(Signed) THOMAS STANES.

ENCLOSURE 1 in No. 6.

From Dr. G. H. K. THWAITES, to the Honorable the Colonial Secretary, dated Royal Botanic Gardens, Peradeniya, 6th October 1874.

In complying with the request conveyed to me in your letter of the 22nd ultimo, I have the honor of handing you the questions I would suggest being sent to Her Majesty's Consuls or to other officers residing in countries where the Coffee tree is cultivated to any extent.

I would also take the liberty to recommend that instructions be given that when answers are sent to these questions there should be forwarded with them dried specimens of stem or foliage, illustrating the character of the disease.

Information respecting any other diseases affecting seriously the Coffee or any other plants of economic importance might also be asked for, and specimens of the same forwarded to the Colonial Office.

*Proceedings of the Madras Government, Revenue Department,
30th November 1875.*

In all cases, it would be particularly desirable that, whether the injury to the plant result from the attacks of fungi or from those of insects, good examples of these pests should be sent for identification.

It may, perhaps, not be considered irrelevant my remarking that, according to my experience, the obtaining such information as is desired from parties interested in the cultivation is frequently attended with some difficulty, owing to an unwillingness on their part to acknowledge there may be any probability of the quantity or quality of their crops being seriously affected.

Extract from Dr. J. D. Hooker's letter, dated Kew, 23rd December 1874, regarding the preparation of Specimens.

These leaves should be carefully pressed flat between sheets of paper, and, when dry, sent Home in this state; also between pieces of paper. Short pieces of the wood with the bark on, or twigs, if these are affected, should be gently dried, and also sent Home carefully wrapped up in soft paper. All such specimens should be ticketed with any observations as to the age, size, condition, &c., of the plants from which they were taken.

FORWARDED to A. H. Streeten, Esq., with the request he will favor the Commissioner with answers to the queries on the reverse, at the same time forwarding specimens prepared in accordance with instructions.

(Signed) J. R. COCKERELL,
Commissioner.

2nd June 1875.

ENCLOSURE 2 in No. 6.

Questions.

Answers.

HAVE the cultivated Coffee trees in Colacumby been observed to be affected by a disease which causes their leaves to become, at certain times and somewhat rapidly, marked with yellow spots or blotches, these leaves soon afterwards falling prematurely, leaving the branches of the trees quite bare or with only the unripe berries upon them?

1. This pest, called leaf-disease, first made its appearance in the Colacumby District about three years ago, and with precisely similar symptoms to those described in Question No. 1.

2. Are the spots or blotches on the underside of the affected leaf covered, upon their first appearance, with dust of a pale orange color, easily rubbed off?

2. This is exactly their appearance.

3. Do the trees seem to recover altogether from the disease, and then, after a certain period, exhibit all the previous symptoms of being infected by it?

3. Unless manured carefully, I have not found the trees throw off the disease, and, within the last three years, I have found the disease leave a field and re-appear.

4. When was the disease first observed in Colacumby, and was it then confined to a particular locality, or was it spread over a large area?

4. In the year 1871, towards its close, it began in a small field of about 5 acres, and spread slowly but surely, though not regularly, as it missed some fields, and appeared on others some distance off.

5. Has it been observed under what conditions as regards climate, soil, or exposure, the disease prevails more or less, and has it shown itself with much greater severity in some years than in others, and have these years been exceptionally wet or dry?

5. The disease was worse last year than in 1872, and in our district last year was very dry and windy; the dry ridges suffered most, and were most exposed to wind.

6. Has the disease been found to seriously diminish the amount of crop, and has the quality of the berries been injuriously affected by it?

7. Have any investigations been made, with the help of the microscope, into the nature of the disease, its mode of propagation, and how it is introduced into the Coffee plant; and, if so, what has been the result of these investigations?

8. Have any other plants besides the Coffee been found to be infested with this identical disease as determined by the microscope?

9. Has any particular treatment as regards the manuring or littering of the Coffee trees, or the application to them or to the soil in which they are growing of any mineral substances, such as sulphur, been found effective in curing the disease or in mitigating the severity of its periodical attacks?

6. Only about one-third of the berries on trees affected ripen, and the outturn of the Coffee when cleaned was 4 bushels more to the ton than usual.

7. By myself none.

8. I have not observed the forest trees or other plants surrounding my estate or the Adderley Estate to be so infested.

9. I have found the trees infested with this disease quite throw it off after being well manured with a small basket of cattle-manure mixed with a basket of pulp, and all weeds and prunings buried in the pit with the manure; but I regret to state that after about eighteen months the disease again appeared and did much damage, and does not seem as if it would leave the trees again until I can manure them.

The above remarks apply to what has taken place within a short time, being on three years' experience, the leaf-disease not having been prevalent on the two estates I work till about three years ago.

(Signed) A. H. STREETEN.

ENCLOSURE 1 in No. 6.

From Dr. G. H. K. THWAITES, to the Honorable the Colonial Secretary, dated Royal Botanic Gardens, Peradeniya, 6th October 1874.

In complying with the request conveyed to me in your letter of the 22nd ultimo, I have the honor of handing you the questions I would suggest being sent to Her Majesty's Consuls or to other officers residing in countries where the Coffee tree is cultivated to any extent.

I would also take the liberty to recommend that instructions be given that when answers are sent to these questions there should be forwarded with them dried specimens of stem or foliage, illustrating the character of the disease.

Information respecting any other diseases affecting seriously the Coffee or any other plants of economic importance might also be asked for, and specimens of the same forwarded to the Colonial Office.

In all cases, it would be particularly desirable that, whether the injury to the plant result from the attacks of fungi or from those of insects, good examples of these pests should be sent for identification.

It may, perhaps, not be considered irrelevant in remarking that, according to my experience, the obtaining such information as is desired from parties interested in the cultivation is frequently attended with some difficulty, owing to an unwillingness on their part to acknowledge there may be any probability of the quantity or quality of their crops being seriously affected.

Extract from Dr. J. D. HOOKER's letter, dated Kew, 23rd December 1874, regarding the preparation of Specimens.

These leaves should be carefully pressed flat between sheets of paper, and, when dry, sent Home in this state; also between pieces of paper. Short pieces of the wood with the bark on, or twigs, if these are affected, should be gently dried, and also sent Home carefully wrapped up in soft paper. All such specimens should be ticketed with any observations as to the age, size, condition, &c., of the plants from which they were taken.

FORWARDED to Mr. L. Reilly, Hillgrove, with the request he will favor the Commissioner with answers to the queries on the reverse.

(Signed) J. R. COCKERELL,
Commissioner.

2nd June 1875.

ENCLOSURE 2 in No. 6.

Questions.

Answers.

HAVE the cultivated Coffee trees in the Ghaut been observed to be affected by a disease which causes their leaves to become, at certain times and somewhat rapidly, marked with yellow spots or blotches, these leaves soon afterwards falling prematurely, leaving the branches of the trees quite bare or with only the unripe berries upon them?

Yes. I have observed the disease on small portions of estate here and there.

2. Are the spots or blotches on the underside of the affected leaf covered, upon their first appearance, with dust of a pale orange color, easily rubbed off?

I have not noticed underside of leaves infected. They merely turned yellow with a black spot and fell off.

3. Do the trees seem to recover altogether from the disease, and then, after a certain period, exhibit all the previous symptoms of being infected by it?

The trees recover the year after being infected, and, in some place, it does not make its appearance again.

4. When was the disease first observed in the Ghaut, and was it then confined to a particular locality, or was it spread over a large area?

I have noticed the disease some 12 years ago in small patches on high ridges, where the soil was poor, and it was confined to a small portion of estate.

5. Has it been observed under what conditions as regards climate, soil, or exposure, the disease prevails more or less, and has it shown itself with much greater severity in some years than in others, and have these years been exceptionally wet or dry?

The disease has been observed both in low and high elevation and the season was dry.

6. Has the disease been found to seriously diminish the amount of crop, and has the quality of the berries been injuriously affected by it?

The disease has been severe when there was a heavy crop on trees, and the Coffee never ripened; it turned yellow, and then black, and was not fit to be sent to English markets.

7. Have any investigations been made, with the help of the microscope, into the nature of the disease, its mode of propagation, and how it is introduced into the Coffee plant; and, if so, what has been the result of these investigations?

No investigations have been made by me with the help of microscope.

*Proceedings of the Madras Government, Revenue Department,
30th November 1875.*

8. Have any other plants besides the Coffee been found to be infested with this identical disease, as determined by the microscope? I have observed the disease in no other trees but Coffee.

9. Has any particular treatment as regards the manuring or littering of the Coffee trees, or the application to them or to the soil in which they are growing of any mineral substances, such as sulphur, been found effective in curing the disease or in mitigating the severity of its periodical attacks? I pruned heavily and manured the parts infected, and used lime which I found beneficial.

From G. HIGGINS, Esq., to J. R. COCKERELL, Esq., Commissioner of the Nilgiris, dated Woodlands, 20th July 1875.

I HAVE the honor to reply herewith to the questions contained in your Circular, dated 2nd June.

I am unable to send you in specimens of the disease, as I am happy to say we have not a single plant on the estate infected with it at present.

I reply to your questions according to their numbers.

Answers to Questions.

1st.—The Coffee trees here have been for the past three years infected with the disease you describe.

2nd.—The spots on the leaves are covered with a dust similar in color to iron rust, which rubs off easily.

3rd.—When the plants infected are pruned and manured, they recover themselves rapidly. I have observed that plants treated so are not troubled with the disease the following year.

4th.—I first noticed the disease in 1872. All the plantations out here were infected by it, but not to a large extent; it was in 1873 that it commenced to spread over large fields of Coffee.

5th.—The disease does not seem to restrict itself to any certain locality; we see it on ridges that are perfectly dry, and in hollows that are continually damp. Parts of an estate that are sheltered seem to be as liable to it as unsheltered places, but, in all cases, the effects are the same. The disease generally shows itself in August and September, which are wet months; we suffered most from it during the North-East Monsoon of 1873.

6th.—The disease causes a large amount of the unripened berries to fall and wither on the trees, but I do not think that the quality of those that remain are in any way affected, except as regards weight, as I have noticed in the season of 1873-74, that the Coffee was lighter than in previous years. Crops from this place generally averaging 89 bushels of parchment to the ton, but in the season named the average of outturn was as high as 92.88 to the ton. I estimate that the loss on this place by unripe berries falling from the plants amounted in the season 1873-74 to about 15 tons or one-fourth of the whole crop.

7th.—I have been unable to make any investigations into the nature of the disease.

8th.—I am not aware of any other plants being infected with the same disease.

9th.—The treatment I have found effectual in bringing the plants round again is a heavy pruning accompanied by liberal dressing of cattle-manure forked in about the roots. I find that parts of the plantation treated in this way in 1873 have been quite free from the disease ever since.

*Proceedings of the Madras Government, Revenue Department,
30th November 1875.*

ENCLOSURE 1 in No. 6.

From Dr. G. H. K. THWAITES, to the Honorable the Colonial Secretary dated Royal Botanic Gardens, Peradeniya, 6th October 1874.

In complying with the request conveyed to me in your letter of the 22nd ultimo, I have the honor of handing you the questions I would suggest being sent to Her Majesty's Consuls or to other officers residing in countries where the Coffee tree is cultivated to any extent.

I would also take the liberty to recommend that instructions be given that, when answers are sent to these questions, there should be forwarded with them dried specimens of stem or foliage illustrating the character of the disease.

Information respecting any other diseases affecting seriously the Coffee or any other plants of economic importance might also be asked for, and specimens of the same forwarded to the Colonial Office.

In all cases it would be particularly desirable that, whether the injury to the plant result from the attacks of fungi or from those of insects, good examples of these pests should be sent for identification.

It may, perhaps, not be considered irrelevant my remarking that, according to my experience, the obtaining such information as is desired from parties interested in the cultivation is frequently attended with some difficulty, owing to an unwillingness on their part to acknowledge there may be any probability of the quantity or quality of their crops being seriously affected.

Extract from Dr. J. D. HOOKER's, letter, dated Kew, 23rd December 1874, regarding the preparation of Specimens.

THESE leaves should be carefully pressed flat between sheets of paper, and when dry, sent Home in this state; also between pieces of paper. Short pieces of the wood with the bark on, or twigs, if these are affected, should be gently dried, and also sent Home carefully wrapped up in soft paper. All such specimens should be ticketed with any observations as to the age, size, condition, &c., of the plants from which they were taken.

FORWARDED to F. Cockburn, Esq., with the request he will favor the Commissioner with answers to the queries on the reverse.

(Signed) J. R. COCKERELL,
Commissioner.

2nd June 1875.

ENCLOSURE 2 in No. 6.

Questions.

Answers.

HAVE the cultivated Coffee trees in Kotergherry been observed to be affected by a disease which causes their leaves to become, at certain times and somewhat rapidly, marked with yellow spots or blotches, these leaves soon afterwards falling prematurely, leaving the branches of the trees quite bare or with only the unripe berries upon them?

Yes.

2. Are the spots or blotches on the under-side of the affected leaf covered, upon their first appearance, with dust of a pale orange color easily rubbed off?

Yes.

*Proceedings of the Madras Government, Revenue Department,
30th November 1875.*

3. Do the trees seem to recover altogether from the disease, and then, after a certain period, exhibit all the previous symptoms of being infected by it?

Yes. And recovers in about two years, but sometimes relapses in three or four.

4. When was the disease first observed in Kotergherry, and was it then confined to a particular locality, or was it spread over a large area?

About six years ago, and on small patches of about half an acre.

5. Has it been observed under what conditions as regards climate, soil, or exposure, the disease prevails more or less, and has it shown itself with much greater severity in some years than in others, and have these years been exceptionally wet or dry?

Have not noted effect of climate.

6. Has the disease been found to seriously diminish the amount of crop, and has the quality of the berries been injuriously affected by it?

No crop on diseased trees for first season after they are affected.

7. Have any investigations been made, with the help of the microscope, into the nature of the disease, its mode of propagation, and how it is introduced into the Coffee plant; and, if so, what has been the result of these investigations?

Am not aware of any, and have not made any myself.

8. Have any other plants, besides the Coffee, been found to be infested with this identical disease, as determined by the microscope?

Yes, one jungle tree is apparently similarly affected.

9. Has any particular treatment as regards the manuring or littering of the Coffee trees, or the application to them or to the soil in which they are growing of any mineral substances, such as sulphur, been found effective in curing the disease or in mitigating the severity of its periodical attacks?

Common cattle manuring and heavy pruning revives the trees, which bear an ordinary crop the second year after such treatment.

(Signed) F. COCKBURN.

I. The cultivated Coffee trees in the Kotergherry District have been sometimes affected by some disease which has resulted in their losing their leaves prematurely. I will not go so far as to state whether this is the result of the leaf-disease in question, but there is no doubt that it must have something to do with the respiratory organs of the leaf. The branches have, in consequence, become denuded more or less, and this has happened always while there was a certain amount of unripe or partially ripened fruit on the trees.

II. I have never been able, at any stage, to get any kind of dust off the affected parts, though I have often tried.

III. Yes. Some of the trees in particular situations seem to get over it regularly every year, and then, contingent on the season (whether wet or otherwise) show all the old symptoms over again.

IV. I have noticed these symptoms for the last nine years, that being the whole period nearly of my acquaintance with Coffee and Coffee planting. I never had any opportunity of noticing at that time the area which was affected, but supposed that it must have been a common thing from the fact that Colonel Cooper, a very old and experienced planter, did not think it

*Proceedings of the Madras Government, Revenue Department,
30th November 1875.*

anything out of the way or particularly injurious to the crop, but this may have been owing to the fact that a very small portion of the estate was affected.

V. Conditions of soil, climate, or exposure, do not seem to make *very much* difference, though, as a rule, where the sub-soil is rocky and the season has been rather dry, more of it is noticed than elsewhere and under other circumstances.

VI. In other districts it has made a good deal of difference as regards both quality and quantity, but here, owing I suppose to the attack being much slighter, the crop does not seem to suffer in any way materially.

VII. No investigations have ever been made with the aid of the microscope to my knowledge, and I do not think there is a single instrument of the kind in the district.

VIII. I have, I think, noticed something similar affecting the custard-apple tree occasionally, but I am not sure of this. If the circumstance should be ever again noticed by me, I will procure samples of the affected parts, and forward through the Commissioner.

IX. No *particular* treatment seems to be needed. High cultivation is all that is necessary, and then even, if the tree be badly affected, it does not seem to make much difference to either current or coming crop.

GENERAL REMARKS.—The only other thing the Coffee plant seems to suffer from is the black bug, an *aphid* similar to that found to affect apple trees occasionally. Though the crop is affected for about two or three years, the bug at the end of that period generally disappears, and the loss of crop is not sufficiently extensive to be of much consequence to a flourishing estate.

(Signed) F. SHERMAN.

ENCLOSURE 1 in No. 6.

From Dr. G. H. K. THWAITES, to the Honorable the Colonial Secretary, dated Royal Botanic Gardens, Peradeniya, 6th October 1874.

In complying with the request conveyed to me in your letter of the 22nd ultimo, I have the honor of handing you the questions I would suggest being sent to Her Majesty's Consuls or to other officers residing in countries where the Coffee tree is cultivated to any extent.

I would also take the liberty to recommend that instructions be given that, when answers are sent to these questions, there should be forwarded with them dried specimens of stem or foliage, illustrating the character of the disease.

Information respecting any other diseases affecting seriously the Coffee or any other plants of economic importance might also be asked for, and specimens of the same forwarded to the Colonial Office.

In all cases, it would be particularly desirable that, whether the injury to the plant result from the attacks of fungi or from those of insects, good examples of these pests should be sent for identification.

It may, perhaps, not be considered irrelevant my remarking that, according to my experience, the obtaining such information as is desired from parties interested in the cultivation is frequently attended with some difficulty, owing to an unwillingness on their part to acknowledge there may be any probability of the quantity or quality of their crops being seriously affected.

Extract from Dr. J. D. HOOKER's letter, dated Kew, 23rd December 1874, regarding the preparation of Specimens.

These leaves should be carefully pressed flat between sheets of paper, and, when dry, sent Home in this state; also between pieces of paper. Short pieces of the wood with the bark on, or twigs, if these are affected, should be gently dried, and also sent Home carefully wrapped up in soft paper. All such specimens should be ticketed with any observations as to the age, size, condition, &c., of the plants from which they were taken.

*Proceedings of the Madras Government, Revenue Department,
30th November 1875.*

FORWARDED to General H. R. Morgan, with the request he will favor the Commissioner with answers to the queries on the reverse; at the same time, forwarding specimens prepared in accordance with instructions.

2nd June 1875.

(Signed) J. R. COCKERELL,
Commissioner.

ENCLOSURE 2 in No. 6.

Questions.

Answers.

HAVE the cultivated Coffee trees in Seegur been observed to be affected by a disease which causes their leaves to become, at certain times and somewhat rapidly, marked with yellow spots or blotches, these leaves soon afterwards falling prematurely, leaving the branches of the trees quite bare or with only the unripe berries upon them?

Yes.

2. Are the spots or blotches on the under-side of the affected leaf covered, upon their first appearance, with dust of a pale orange color, easily rubbed off?

Yes.

3. Do the trees seem to recover altogether from the disease, and then, after a certain period, exhibit all the previous symptoms of being infected by it?

Yes.

4. When was the disease first observed in Seegur, and was it then confined to a particular locality, or was it spread over a large area?

In 1874; over a large area.

5. Has it been observed under what conditions as regards climate, soil, or exposure, the disease prevails more or less, and has it shown itself with much greater severity in some years than in others, and have these years been exceptionally wet or dry.

Trees unmanured are most liable, especially a tree of large habit of growth, but a shy bearer.

6. Has the disease been found to seriously diminish the amount of crop, and has the quality of the berries been injuriously affected by it?

Yes; say, at least ten per cent. of loss.

7. Have any investigations been made, with the help of the microscope, into the nature of the disease, its mode of propagation, and how it is introduced into the Coffee plant; and, if so, what has been the result of these investigations?

No.

8. Have any other plants besides the Coffee been found to be infested with this identical disease, as determined by the microscope?

No.

*Proceedings of the Madras Government, Revenue Department,
30th November 1875.*

9. Has any particular treatment as regards the manuring or littering of the Coffee trees, or the application to them or to the soil in which they are growing of any mineral substances, such as sulphur, been found effective in curing the disease or in mitigating the severity of its periodical attacks?

Deep forking is the best remedy.

(Signed) H. R. MORGAN, Major-General.

ENCLOSURE 1 in No. 6.

From Dr. G. H. K. THWAITES, to the Honorable the Colonial Secretary, dated Royal Botanic Gardens, Peradeniya, 6th October 1874.

In complying with the request conveyed to me in your letter of the 22nd ultimo, I have the honor of handing you the questions I would suggest being sent to Her Majesty's Consuls or to other officers residing in countries where the Coffee tree is cultivated to any extent.

I would also take the liberty to recommend that instructions be given that, when answers are sent to these questions, there should be forwarded with them dried specimens of stem or foliage illustrating the character of the disease.

Information respecting any other diseases affecting seriously the Coffee or any other plants of economic importance might also be asked for, and specimens of the same forwarded to the Colonial Office.

In all cases it would be particularly desirable that, whether the injury to the plant result from the attacks of fungi or from those of insects, good examples of these pests should be sent for identification.

It may, perhaps, not be considered irrelevant my remarking that, according to my experience, the obtaining such information as is desired from parties interested in the cultivation is frequently attended with some difficulty, owing to an unwillingness on their part to acknowledge there may be any probability of the quantity or quality of their crops being seriously affected.

Extract from Dr. J. D. HOOKER's letter, dated Kew, 23rd December 1874, regarding the preparation of Specimens.

These leaves should be carefully pressed flat between sheets of paper, and, when dry, sent Home in this state; also between pieces of paper. Short pieces of the wood with the bark on, or twigs, if these are affected, should be gently dried, and also sent Home carefully wrapped up in soft paper. All such specimens should be ticketed with any observations as to the age, size, condition, &c., of the plants from which they were taken.

FORWARDED to Captain H. Reade, Coonoor, with the request he will favor the Commissioner with answers to the queries on the reverse.

(Signed) J. R. COCKERELL,
Commissioner.

2nd June 1875.

ENCLOSURE 2 in No. 6.

Questions.

Answers.

HAVE the cultivated Coffee trees in Coonoor been observed to be affected by a disease which causes their leaves to become, at certain times and somewhat rapidly, marked with yellow spots or blotches, these leaves soon afterwards falling prematurely, leaving the branches of the trees quite bare or with only the unripe berries upon them?

Yes.

*Proceedings of the Madras Government, Revenue Department,
30th November 1875.*

2. Are the spots or blotches on the under-side of the affected leaf covered, upon their first appearance, with dust of a pale orange color easily rubbed off?

Yes.

3. Do the trees seem to recover altogether from the disease, and then, after a certain period, exhibit all the previous symptoms of being infected by it?

Yes.

4. When was the disease first observed in Coonoor, and was it then confined to a particular locality, or was it spread over a large area?

A long time, but cause unknown until latterly.

5. Has it been observed under what conditions as regards climate, soil, or exposure, the disease prevails more or less, and has it shown itself with much greater severity in some years than in others, and have these years been exceptionally wet or dry?

Every condition of elevation, climate, soil or exposure; wet years the disease is worst.

6. Has the disease been found to seriously diminish the amount of crop, and has the quality of the berries been injuriously affected by it?

The trees early and badly affected do not ripen their crop; does not appear to affect the quality.

7. Have any investigations been made, with the help of the microscope, into the nature of the disease, its mode of propagation, and how it is introduced into the Coffee plant; and, if so, what has been the result of these investigations?

Not by myself nor have heard of any by my neighbours.

8. Have any other plants besides the Coffee been found to be infested with this identical disease, as determined by the microscope?

Not noticed any. Tea affected with a leaf-disease but different.

9. Has any particular treatment as regards the manuring or littering of the Coffee trees, or the application to them or to the soil in which they are growing of any mineral substances, such as sulphur, been found effective in curing the disease or in mitigating the severity of its periodical attacks?

Tree will recover after manuring, but is still subject to periodical attacks.

ENCLOSURE 1 in No. 6.

From Dr. G. H. K. THWAITES, to the Honorable the Colonial Secretary, dated Royal Botanic Gardens, Peradeniya, 6th October 1874.

In complying with the request conveyed to me in your letter of the 22nd ultimo, I have the honor of handing you the questions I would suggest being sent to Her Majesty's Consuls or to other officers residing in countries where the coffee tree is cultivated to any extent.

2. I would also take the liberty to recommend that instructions be given that, when answers are sent to these questions, there should be forwarded with them dried specimens of stem or foliage illustrating the character of the disease.

3. Information respecting any other diseases affecting seriously the coffee or any other plants of economic importance might also be asked for, and specimens of the same forwarded to the Colonial Office.

*Proceedings of the Madras Government, Revenue Department,
30th November 1875.*

4. In all cases it would be particularly desirable that, whether the injury to the plant result from the attacks of fungi or from those of insects, good examples of these pests should be sent for identification.

5. It may, perhaps, not be considered irrelevant my remarking that, according to my experience, the obtaining such information as is desired from parties interested in the cultivation is frequently attended with some difficulty, owing to an unwillingness on their part to acknowledge there may be any probability of the quantity or quality of their crops being seriously affected.

EXTRACT from Dr. J. D. HOOKER'S letter, dated Kew, 23rd December 1874, regarding the preparation of specimens.

THESE leaves should be carefully pressed flat between sheets of paper and when dry sent Home in this state, also between pieces of paper. Short pieces of the wood with the bark on, or twigs, if these are affected, should be gently dried, and also sent Home, carefully wrapped up in soft paper. All such specimens should be ticketed with any observations as to the age, size, condition, &c., of the plants from which they were taken.

FORWARDED to Mr. T. Ray, Billicul, with the request he will favor the Commissioner with answers to the queries on the reverse.

3rd June 1875.

(Signed) J. R. COCKERELL,
Commissioner.

ENCLOSURE 2 in No. 6.

Questions.

Answers.

HAVE the cultivated coffee trees in Billicul been observed to be affected by a disease which causes their leaves to become, at certain times and somewhat rapidly, marked with yellow spots or blotches, these leaves soon afterwards falling prematurely, leaving the branches of the trees quite bare or with only the unripe berries upon them?

Yes; about one dozen coffee trees.

2. Are the spots or blotches on the under-side of the affected leaf covered, upon their first appearance, with dust of a pale orange color easily rubbed off?

Yes.

3. Do the trees seem to recover altogether from the disease, and then, after a certain period, exhibit all the previous symptoms of being infected by it?

Yes.

4. When was the disease first observed in Billicul, and was it then confined to a particular locality or was it spread over a large area?

June 1873, and confined to a particular locality.

5. Has it been observed under what conditions, as regards climate, soil, or exposure, the disease prevails more or less, and has it shown itself with much greater severity in some years than in others, and have these years been exceptionally wet or dry?

In places near a stream and in a rich loam with a damp bottom. Trees suffered very much, losing both leaves and crop of coffee. Rain in excess during season of 1873 and 1874.

*Proceedings of the Madras Government, Revenue Department,
30th November 1875.*

6. Has the disease been found to seriously diminish the amount of crop, and has the quality of the berries been injuriously affected by it?

Yes, the coffee turning black on the trees, and even the ripe berries being light and the seed imperfectly formed.

7. Have any investigations been made, with the help of the microscope, into the nature of the disease, its mode of propagation, and how it is introduced into the coffee plant, and, if so, what has been the result of these investigations?

No.

8. Have any other plants besides the coffee been found to be infested with this identical disease as determined by the microscope?

No.

9. Has any particular treatment as regards the manuring or littering of the coffee trees, or the application to them or to the soil in which they are growing of any mineral substances, such as sulphur, been found effective in curing the disease or in mitigating the severity of its periodical attacks?

No.

BILICUL,
14th July 1875.

(Signed) THOMAS RAY.

SUBMITTED to Government with reference to G. O., dated 10th April 1875, No. 574.

(True Copies and Extract.)

(Signed) C. A. GALTON,
Acting Sub-Secretary.

No. 338.

ORDER THEREON, 30th November 1875, No. 1,715.

Miscellaneous.

ORDERED that the foregoing Proceedings, together with the enclosure, be forwarded to the Secretary of State.

(True Extract.)

(Signed) D. F. CARMICHAEL,
Secretary to Government.

To the Board of Revenue.

Exd. F. R. Bantleman.

Govt. of 1875 Madras.

REVENUE.

To

THE BOARD OF REVENUE.

Dated November, 30th.

Recd.

Encl.

G. O., 30th November 1875, No. 1,715.

NOVEMBER.

Nos. 337-338.

Coffee-leaf disease.—Resolving to forward to the Secretary of State Proceedings of the Board of Revenue on report of the Commissioner of the Nilgiris on —.

No. 1,075.

PROCEEDINGS OF THE BOARD OF REVENUE, dated 29th April 1875.

Read the following Proceedings of the Madras Government, dated 10th April 1875, No. 574, Revenue Department:—

ABSTRACT.—*Coffee-leaf Disease in Ceylon.*—Communicating to the Board of Revenue despatch from the Secretary of State relating to —, and requesting them to furnish the information required in communication with the Collector of Malabar, Commissioner of the Nilgiris, and the Resident of Travancore.

COMMUNICATED to the Collector of Malabar, Commissioner of the Nilgiris, and the Resident of Travancore, who will, in communication with the leading planters and others experienced in the subject, obtain replies to the queries propounded and specimens of affected plants, particular attention being paid to the instructions as to preparation contained in Dr. Hooker's letter of the 23rd December 1874.

(A true Extract.)

(Signed)

C. A. GALTON,
Acting Sub-Secretary.

To the Collector of Malabar, with copy of G. O. X
„ the Commissioner of the Nilgiris, with do.
„ the Resident of Travancore, with do. X

x No reply received

Exd. J. W. Fischer.

No. 2875.

PROCEEDINGS OF THE BOARD OF REVENUE, dated 15th October 1875.

Read the following letter from J. R. COCKERELL, Esq., Commissioner of the Nilgiris, to H. E. STOKES, Esq., Acting Secretary to the Board of Revenue, dated Ootacamund, 25th September 1875, No. 104:—

PROCEEDINGS of the Board, No. 1,075, dated 29th April 1875, directed me for answers a set of questions proposed by Mr. Thwaites of Ceylon with reference to the leaf-disease in coffee.

Mr. McIvor, the Superintendent of cinchona plantations, who possesses coffee estates at Kartairy and Hoolicul, writes that the estates were opened in 1842, and that leaf-disease has pervaded them for the last twenty-six years. I forward specimens of affected leaves which he has submitted to my office. He states the spots on their first appearance are minute and scarcely distinguishable, but ultimately the leaf becomes covered with yellow blotches of a distinct bead-formed fungus, arranged in intricate lace-like patterns. As the fungi mature, they become full of yellow spores, easily rubbed off, insomuch that a person walking through a field of infected coffee becomes covered with yellow dust. Wind raises clouds of the spores.

3. The trees apparently recover from the disease in the spring of the year, and throw out fresh foliage, which, in its turn, is attacked. The disease appears in all soils and exposures. It does not appear to be in any way affected by seasons. If the disease is bad, the crop is materially reduced. Coffee on diseased trees is imperfectly formed, and the berry has frequently no kernel, though to the eye it appears plump and fully developed.

4. Mr. McIvor does not know the origin of the disease, and is acquainted with no practical remedy. The spread of the disease is easily accounted for, by wind and the carriage of the spores by persons passing through the coffee.

5. Mr. McIvor has not observed the disease on any plants but coffee. Manure stimulates the plants and makes them throw out fresh leaves, but does not arrest disease. Carbolic acid and sulphur cause the fungus to shrivel, but the practical application of these remedies over large areas is impossible. Kartairy is not a rainy quarter of the Hills. It is only open to the north-east monsoon, and receives, say, sixty inches of rain per annum.

6. Mr. Wapshare, the agent of Mr. Ouchterlony in the Ouchterlony Valley, containing 5,000 Acres of coffee, states that the disease appeared in the valley in 1873 and attacked the "chie" trees only. These trees, at the best, yield but little produce, and the object of the planter should be to get rid of them. The rain-fall in the valley averages 150 inches. Mr. Wapshare finds close root-pruning, followed by manuring, strengthens the tree and checks the disease.

7. The estates of Messrs. Stanes, Streeton and Reilly are in the Coonoor Ghaut, where the rain-fall averages 60 inches, well distributed. The disease has appeared in this quarter, only within the last few years, and is found to be controllable by high cultivation. The impression here is, that it is fostered by deficient moisture and appears chiefly on exposed parts of estates.

8. Mr. Higgins, whose estate is at Thaymullay, a dry quarter, finds the disease capricious, appearing on exposed ridges and in hollows. It attacks the trees in the wettest months. High cultivation checks it.

1875.

Board of Revenue

MADRAS.

PROCEEDINGS, 29TH APRIL 1875, No. 1,075.

Encl.

Received

APRIL.
No. 1,075.

Office-leaf Disease—in Ceylon.—Government Order communicating to Board despatch from Secretary of State relating to—, and requesting them to furnish, in communication with Collector of Malabar, Commissioner of Nilgiris, and the Resident of Travancore, the required information and specimens of the affected plants, communicated to officers concerned with instructions.

9. The estate of Mr. Cockburn is at Kotergherry. The disease here is arrested by high cultivation. Mr. Cockburn states he has seen the disease on "one jungle tree" as well as on coffee. Mr. Sherman, whose property is in the same quarter, thinks he has seen the disease on the custard-apple tree.

10. General Morgan thinks high cultivation checks the disease.
 With these remarks, I have the honor to submit the replies I have received. It will be observed that no accurate observations have been made on the cause and progress of the disease, calculated to lead to scientific results.

12. I have made constant inquiries on this subject in person, since my appointment to the Hills, and have formed an impression that the disease occurs chiefly in spots where the tap-roots of the trees have run down to a cold dry soil. An apparent remedy in these cases has been deep draining and manure, to give strength to the tree.

ENCLOSURE No. 1.—Replies to questions proposed by Mr. Thwaites with specimens of coffee leaves.

SUBMITTED to Government with reference to G.O., dated 10th April 1875, No. 574.

(A true Copy and Extract.)

W. H. French
 Acting Sub-Secretary.

To the Acting Secretary to Government, Revenue Department,
 with one enclosure, to be returned, and copy of Board's
 Proceedings, dated 20th April 1875, No. 1,005.
 Copy to the Commissioner of the Nilgiris.

W. H. French
 20th November 1875

*Prize that the foreman
 has won for the best
 he forwarded to the Secretary of the
 Nilgiris*

Coffee-leaf Disease.—Report of Commission-
 or of Nilgiris on —, submitted to Government.
 20th Nov. 1875
W. H. French

Received 20. Oct 75

PROCEEDINGS, 15th OCTOBER 1875, No. 2,875.
20th Oct 75

No 4072
 Revenue 1875. *Repts*
 Board of Revenue,
 MADRAS.



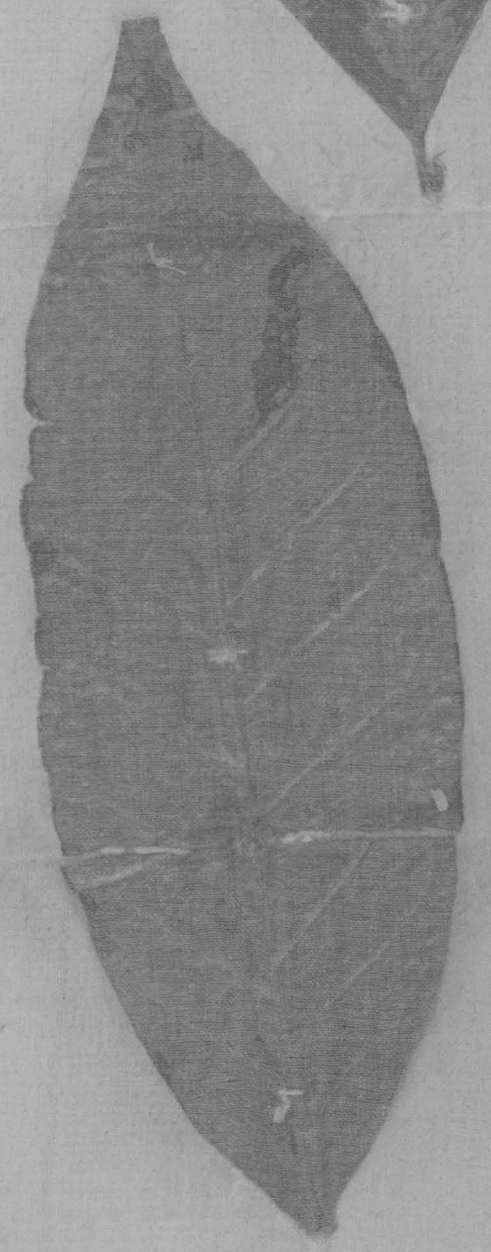
No I

*The upper and lower side of 2 leaves
 from a diseased tree in the first stage*



No II

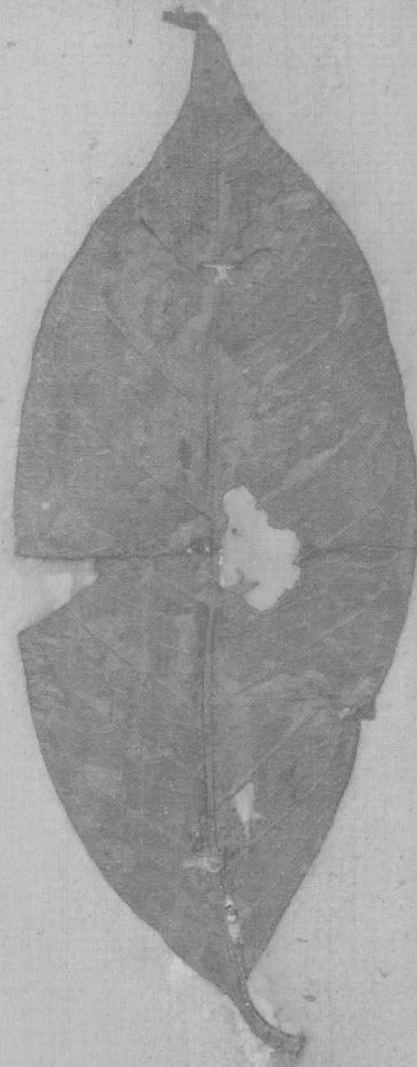
*The disease in its further
 advanced stage*





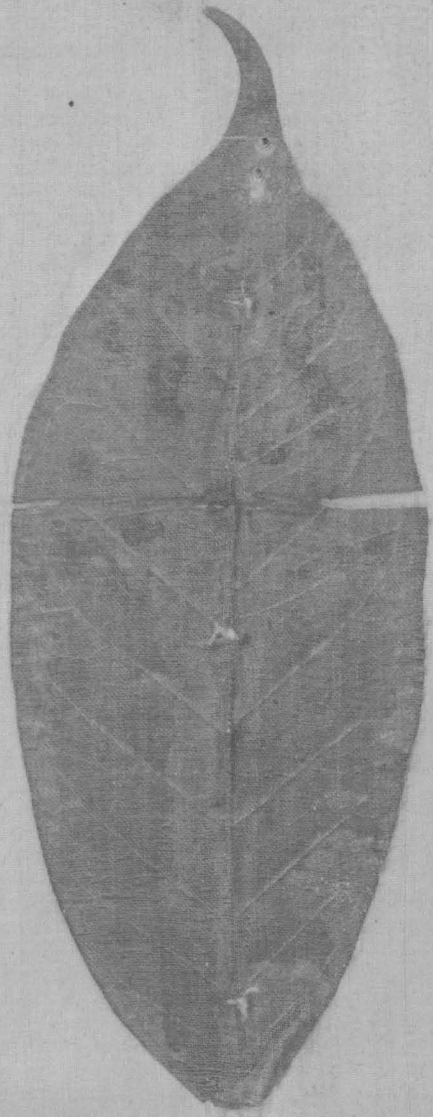
No IV

The leaf in its decayed and shrivelled condition prior to falling from the tree.



No III

The disease covering the upper and lower surfaces of the leaf.



No 93

Government Gardens
Cotacamund 14th August 1875

From

W B Mac Iver Esqre
Supt Govt. Chin. Plantations

To

J H Cockerill Esqre
Commissioner of the Nilgiris
Cotacamund

Sir

enclat

With reference to your letter of the
22nd June 1875 I have the honor to submit the
following observations on the questions
submitted with reference to "leaf
disease" in coffee.

2 In reply to question No 1 I would
remark that on the Hoolical and
Kartairy Coffee Estates where the trees were
planted in 1842 the leaf disease has
been observed for more than 26 years,
but only in the last 2 years it developed
to so serious an extent as to cause anxiety

3 Question No 2. The spots or blotches
on their first appearance are minute
and difficult to be distinguished as
at specimen No 1. Ultimately the
leaf

leaf becomes covered with yellow blotches of a distinct bead formed fungi, arranged upon the leaf in intricate lace-like patterns, as this fungi advances to maturity the bead-like formations become full of yellow spores, easily rubbed off so that a person walking through a piece of infected coffee is covered with this "yellow dust" (spores of the fungus). In dry weather heavy gusts of wind often raise a visible cloud of these spores from affected trees.

4. Question No 3. The trees rapidly recover from the disease in the Spring of the year, and throw out fresh foliage which in its turn becomes more or less infected. On portions of the Estate which had suffered seriously for the last 2 years the plants seem now to be more healthy.

5. Question No 4. The disease at Hooleil and Hartauy has been observed for upwards of 26 years but only developed to an alarming extent within the last 2 years when it has spread more or less over the whole extent under cultivation.

6. Question No 5. The disease has appeared on all soils and exposures. Last year was exceptionally wet and the disease was very bad. This year is unusually dry

dry, and the disease is equally bad.
7. Question No 6. On the Hartauy Estate the average yield for the last 14 years has been about 7 Cwt. per acre, during the last year the disease has reduced the yield to 3 Cwt. per acre. The berries on the diseased trees are imperfectly formed, and although to external appearance fully developed, have frequently no kernel.
8. Question No 7. I have examined the blotches under the microscope. I treated them with different preparations, but have not been able to trace any indication of a practical remedy. How the disease has been introduced is involved in obscurity. The conditions which has caused its development to such an alarming extent seems a still more difficult question. The spread of the disease is easily accounted for. The spores carried by the wind adhering to labourers and animals passing through the coffee accounts for the germs being spread.

9. Question No 8. I have not observed the disease on any other plant.

10. Question No 9. Portions of the Estate affected with disease have been heavily

heavily manured and the ground littered
with ~~low~~ and lemn grass with good
results. These applications stimulate
a new flush of leaves, but apparently
has no effect upon the disease and
application of strong Carbolic acid to
the tissue of the fungus causes it to
shriveled up, and change its texture. Ap-
plications of sulphur has a similar effect,
but the practical application of such
remedies become impossible I therefore
believe considerable difficulty exists
in discovering any application calculated
to destroy or retard the spread of this
disease

II. I enclose samples of leaves exhibiting
the disease in different stages No. I being
the upper and lower side of 2 leaves from
a diseased tree in the first stage No. II
exhibits the disease in its further advanced
stage No. III the disease covering the upper
and lower surfaces of the leaf No. IV il-
lustrating the leaf in its diseased and
shrivelled condition prior to falling from
the tree

I have the honor to be
Your most Obedt Servt

J. S. M. Esq
Capt East Chin. Planters

17
Enclosure 1 in No. 6.

From Dr. G. H. K. THWAITES, to the Honorable the Colonial Secretary, dated
Royal Botanic Gardens, Peradeniya, 6th October, 1874.

In complying with the request conveyed to me in your letter of the 22nd ultimo,
I have the honor of handing you the questions I would suggest being sent to Her
Majesty's Consuls or to other officers residing in countries where the coffee tree
is cultivated to any extent.

I would also take the liberty to recommend that instructions be given that,
when answers are sent to these questions, there should be forwarded with them dried
specimens of stem or foliage illustrating the character of the disease.

Information respecting any other diseases affecting seriously the coffee or any
other plants of economic importance might also be asked for, and specimens of the
same forwarded to the Colonial Office.

In all cases it would be particularly desirable that, whether the injury to the
plant result from the attacks of fungi or from those of insects, good examples of these
pests should be sent for identification.

It may, perhaps, not be considered irrelevant my remarking that, according to
my experience the obtaining such information as is desired from parties interested in
the cultivation, is frequently attended with some difficulty, owing to an unwillingness
on their part to acknowledge there may be any probability of the quantity or quality
of their crops being seriously affected.

Extract from Dr. J. D. HOOKER'S letter, dated Kew, 23rd December, 1874, regard-
ing the preparation of specimens.

These leaves should be carefully pressed flat between sheets of paper, and when
dry, sent home in this state, also between pieces of paper. Short pieces of the wood with
the bark on, or twigs, if these are affected, should be gently dried, and also sent home,
carefully wrapped up in soft paper. All such specimens should be ticketed with any
observations as to the age, size, condition, &c., of the plants from which they were
taken.

Forwarded to F. Lockhart Esq
with the request he will forward the
Commissioner with answers to the
queries on the reverse
J. S. M.
Commissioner
2nd June 1875
Commr M. C.

as the disease in 1874

Enclosure 2 in No. 6.

Questions.

HAVE the cultivated coffee trees in ~~Kenya~~ been observed to be affected by a disease which causes their leaves to become, at certain times and somewhat rapidly, marked with yellow spots or blotches, these leaves soon afterwards falling prematurely, leaving the branches of the trees quite bare or with only the unripe berries upon them?

2. Are the spots or blotches on the underside of the affected leaf covered, upon their first appearance, with dust of a pale orange colour easily rubbed off?

3. Do the trees seem to recover altogether from the disease, and then, after a certain period, exhibit all the previous symptoms of being infected by it?

4. When was the disease first observed in ~~Kenya~~, and was it then confined to a particular locality, or was it spread over a large area?

5. Has it been observed under what conditions as regards climate, soil, or exposure the disease prevails more or less, and has it shown itself with much greater severity in some years than in others, and have these years been exceptionally wet or dry?

6. Has the disease been found to seriously diminish the amount of crop, and has the quality of the berries been injuriously affected by it?

7. Have any investigations been made, with the help of the microscope, into the nature of the disease, its mode of propagation, and how it is introduced into the coffee plant, and, if so, what has been the result of these investigations?

8. Have any other plants besides the coffee been found to be infested with this identical disease, as determined by the microscope?

9. Has any particular treatment as regards the manuring or littering of the coffee trees, or the application to them or to the soil in which they are growing of any mineral substances, such as sulphur, been found effective in curing the disease or in mitigating the severity of its periodical attacks?

Yes.

Yes.

Yes. Cured recovered in about two years, but sometimes relapses in three or four. About six years ago, and on small patches of about half an acre.

Have not noted effect of climate.

No crop on diseased trees for 1st season after they are affected.

Am not aware - and have not made any myself.

Yes. One jungle tree apparently similarly affected.

Common Cattle manuring with heavy pruning removed the trees which bear an ordinary crop the second year after such treatment.

G. Lockhart

I.

The cultivated coffee trees in the Kotinghering District have been sometimes affected by some disease which has resulted in their losing their leaves prematurely. I will not go so far as to state whether this is the result of the leaf disease in question but there is no doubt that it must have something to do with the respiratory organs of the leaf. The branches leave in consequence become denuded more or less and this has happened always while there was a certain amount of unripe or partially ripened fruit on the trees.

II.

I have never been able, at any stage, to get any kind of dust off the affected parts though I have often tried.

III.

Yes. Some of the trees in particular situations seem to get over it regularly every year and then, contingent on the season,

(whether wet or otherwise) show all the old symptoms over again.

IV I have noticed these symptoms for the last nine years that being the whole period nearly of my acquaintance with coffee and coffee planting. I never had any opportunity of noticing at that time the area which was affected but supposed that it must have been a common thing from the fact that Colonel Cooper, a very old and experienced planter, did not think it anything out of the way or particularly injurious to the crop but this may have been owing to the fact that a very small portion of the estate was affected.

V Conditions of soil climate or exposure do not seem to make very much difference though as a rule where the subsoil is rocky and the season has been rather dry, more of it is noticed than elsewhere and under other circumstances.

VI In other districts it has made

a good deal of difference as regards both quality and quantity but here owing to the attack being much lighter the crop does not seem to suffer in any way materially.

VII No investigations have ever been made with the aid of the microscope being knowledge and I do not think there is a single instrument of the kind in the district.

VIII I have I think noticed something similar affecting the Custard-apple tree occasionally but I am not sure of this. If the circumstance should be over again noticed by me I will procure samples of the affected parts and forward through the Commissioner.

IX No particular treatment seems to be needed. High cultivation is all that is necessary and then even if the tree be badly affected it does not seem to make much difference to either current or coming crops.

General Remarks.

The only other thing the coffee

plant seems to suffer from is the black bug,
an aphid, similar to that found to affect
apple trees occasionally. Though the crop
is affected for about two or three years, the
bug at the end of that period generally
disappears and the loss of crop is not
sufficiently extensive to be of much consequence
to a flourishing estate.

J. W. May Sherman

Coffee - Conf. disease
Sherman Mr. F.
Furnished the information
Called for regarding -

Recd 24th July 1875

Mr. F. Sherman

Enclosure 1 in No. 6.

From Dr. G. H. K. THWAITES, to the Honorable the Colonial Secretary, dated
Royal Botanic Gardens, Peradeniya, 6th October, 1874.

In complying with the request conveyed to me in your letter of the 22nd ultimo,
I have the honor of handing you the questions I would suggest being sent to Her
Majesty's Consuls or to other officers residing in countries where the coffee tree
is cultivated to any extent.

I would also take the liberty to recommend that instructions be given that,
when answers are sent to these questions, there should be forwarded with them dried
specimens of stem or foliage illustrating the character of the disease.

Information respecting any other diseases affecting seriously the coffee or any
other plants of economic importance might also be asked for, and specimens of the
same forwarded to the Colonial Office.

In all cases it would be particularly desirable that, whether the injury to the
plant result from the attacks of fungi or from those of insects, good examples of these
pests should be sent for identification.

It may, perhaps, not be considered irrelevant my remarking that, according to
my experience the obtaining such information as is desired from parties interested in
the cultivation, is frequently attended with some difficulty, owing to an unwillingness
on their part to acknowledge there may be any probability of the quantity or quality
of their crops being seriously affected.

Extract from Dr. J. D. HOOKER'S letter, dated Kew, 23rd December, 1874, regard-
ing the preparation of specimens.

These leaves should be carefully pressed flat between sheets of paper, and when
dry, sent home in this state, also between pieces of paper. Short pieces of the wood with
the bark on, or twigs, if these are affected, should be gently dried, and also sent home,
carefully wrapped up in soft paper. All such specimens should be ticketed with any
observations as to the age, size, condition, &c., of the plants from which they were
taken.

Forwarded to Genl. A. H. Margum with
the request - he will forward the Commission
with answers to the queries on the
reverse - at the same time forwarding
specimens prepared in accordance
with instructions

Commissioner

2nd June 1875

Enclosure 2 in No. 6.

Questions.

HAVE the cultivated coffee trees in ~~Sumatra~~ been observed to be affected by a disease which causes their leaves to become, at certain times and somewhat rapidly, marked with yellow spots or blotches, these leaves soon afterwards falling prematurely, leaving the branches of the trees quite bare or with only the unripe berries upon them?

2. Are the spots or blotches on the underside of the affected leaf covered, upon their first appearance, with dust of a pale orange colour easily rubbed off?

3. Do the trees seem to recover altogether from the disease, and then, after a certain period, exhibit all the previous symptoms of being infected by it?

4. When was the disease first observed in ~~Sumatra~~, and was it then confined to a particular locality, or was it spread over a large area?

5. Has it been observed under what conditions as regards climate, soil, or exposure the disease prevails more or less, and has it shown itself with much greater severity in some years than in others, and have these years been exceptionally wet or dry?

6. Has the disease been found to seriously diminish the amount of crop, and has the quality of the berries been injuriously affected by it?

7. Have any investigations been made, with the help of the microscope, into the nature of the disease, its mode of propagation, and how it is introduced into the coffee plant, and, if so, what has been the result of these investigations?

8. Have any other plants besides the coffee been found to be infested with this identical disease, as determined by the microscope?

9. Has any particular treatment as regards the manuring or littering of the coffee trees, or the application to them or to the soil in which they are growing of any mineral substances, such as sulphur, been found effective in curing the disease or in mitigating the severity of its periodical attacks?

Enclosure 1 in No. 6.

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IN complying with the request conveyed to me in your letter of the 22nd ultimo, I have the honor of handing you the questions I would suggest being sent to Her Majesty's Consuls or to other officers residing in countries where the coffee tree is cultivated to any extent.

I would also take the liberty to recommend that instructions be given that, when answers are sent to these questions, there should be forwarded with them dried specimens of stem or foliage illustrating the character of the disease.

Information respecting any other diseases affecting seriously the coffee or any other plants of economic importance might also be asked for, and specimens of the same forwarded to the Colonial Office.

In all cases it would be particularly desirable that, whether the injury to the plant result from the attacks of fungi or from those of insects, good examples of these pests should be sent for identification.

It may, perhaps, not be considered irrelevant my remarking that, according to my experience the obtaining such information as is desired from parties interested in the cultivation, is frequently attended with some difficulty, owing to an unwillingness on their part to acknowledge there may be any probability of the quantity or quality of their crops being seriously affected.

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Forwarded to Capt. H. Reade Coombe with the request he will favor the Commissioners with answers to the queries on the reverse. H. M. M. Commissioner

22 June 1875
Comm. Wm

Enclosure 2 in No. 6.

Questions.

HAVE the cultivated coffee trees in ~~Ceylon~~ been observed to be affected by a disease which causes their leaves to become, at certain times and somewhat rapidly, marked with yellow spots or blotches, these leaves soon afterwards falling prematurely, leaving the branches of the trees quite bare or with only the unripe berries upon them?

2. Are the spots or blotches on the underside of the affected leaf covered, upon their first appearance, with dust of a pale orange colour easily rubbed off?

3. Do the trees seem to recover altogether from the disease, and then, after a certain period, exhibit all the previous symptoms of being infected by it?

4. When was the disease first observed in ~~Ceylon~~, and was it then confined to a particular locality, or was it spread over a large area?

5. Has it been observed, under what conditions as regards climate, soil, or exposure the disease prevails more or less, and has it shown itself with much greater severity in some years than in others, and have these years been exceptionally wet or dry?

6. Has the disease been found to seriously diminish the amount of crop, and has the quality of the berries been injuriously affected by it?

7. Have any investigations been made, with the help of the microscope, into the nature of the disease, its mode of propagation, and how it is introduced into the coffee plant, and, if so, what has been the result of these investigations?

Have any other plants besides the coffee been found to be infested with this identical disease, as determined by the microscope?

9. Has any particular treatment as regards the manuring or littering of the coffee trees, or the application to them or to the soil in which they are growing of any mineral substances, such as sulphur, been found effective in curing the disease or in mitigating the severity of its periodical attacks?

Yes

Yes

Yes

A long time but cannot
remember until lately

Very common in low-lying
climate, soil or exposure, but
years the disease is not

The trees, early & badly affected
do not bear their crops, and
appear to affect the quality

Not by myself nor have
heard of any by my neighbours

Not noticed any, I am affected
with a leaf disease but different

They will recover after some
time, but is still subject to
periodical attacks.

Enclosure 1 in No. 6.

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Royal Botanic Gardens, Peradeniya, 6th October, 1874.

In complying with the request conveyed to me in your letter of the 22nd ultimo, I have the honor of handing you the questions I would suggest being sent to Her Majesty's Consuls or to other officers residing in countries where the coffee tree is cultivated to any extent.

I would also take the liberty to recommend that instructions be given that, when answers are sent to these questions, there should be forwarded with them dried specimens of stem or foliage illustrating the character of the disease.

Information respecting any other diseases affecting seriously the coffee or any other plants of economic importance might also be asked for, and specimens of the same forwarded to the Colonial Office.

In all cases it would be particularly desirable that, whether the injury to the plant result from the attacks of fungi or from those of insects, good examples of these pests should be sent for identification.

It may, perhaps, not be considered irrelevant my remarking that, according to my experience the obtaining such information as is desired from parties interested in the cultivation, is frequently attended with some difficulty, owing to an unwillingness on their part to acknowledge there may be any probability of the quantity or quality of their crops being seriously affected.

Extract from Dr. J. D. HOOKER'S letter, dated Kew, 23rd December, 1874, regarding the preparation of specimens.

These leaves should be carefully pressed flat between sheets of paper, and when dry, sent home in this state, also between pieces of paper. Short pieces of the wood with the bark on, or twigs, if these are affected, should be gently dried, and also sent home, carefully wrapped up in soft paper. All such specimens should be ticketed with any observations as to the age, size, condition, &c., of the plants from which they were taken.

Forwarded to Mr J. Kay - Botanical
with the request he write from
the Commissioner with answers to
the queries on the above

3rd June 1875 -
C. M. C.

Accepted

Commence

Enclosure 2 in No. 6.

Questions.

HAVE the cultivated coffee trees in *Cilicut* been observed to be affected by a disease which causes their leaves to become at certain times and somewhat rapidly, marked with yellow spots or blotches, these leaves soon afterwards falling prematurely, leaving the branches of the trees quite bare or with only the unripe berries upon them?

2. Are the spots or blotches on the underside of the affected leaf covered, upon their first appearance, with dust of a pale orange colour easily rubbed off?

3. Do the trees seem to recover altogether from the disease, and then, after a certain period, exhibit all the previous symptoms of being infected by it?

4. When was the disease first observed in *Cilicut* and was it then confined to a particular locality, or was it spread over a large area?

5. Has it been observed under what conditions as regards climate, soil, or exposure the disease prevails more or less, and has it shown itself with much greater severity in some years than in others, and have these years been exceptionally wet or dry?

6. Has the disease been found to seriously diminish the amount of crop, and has the quality of the berries been injuriously affected by it?

7. Have any investigations been made, with the help of the microscope, into the nature of the disease, its mode of propagation, and how it is introduced into the coffee plant, and, if so, what has been the result of these investigations?

8. Have any other plants besides the coffee been found to be infested with this identical disease, as determined by the microscope?

9. Has any particular treatment as regards the manuring or littering of the coffee trees, or the application to them or to the soil in which they are growing of any mineral substances, such as sulphur, been found effective in curing the disease or in mitigating the severity of its periodical attacks?

Yes about one dozen Co.

Yes

Yes

June 1873. And confined to a particular locality.

In places near a stream and in a rich loam, with bottom. Trees suffered very much losing both leaves & crop of coffee. Rain in excess. During season of 1873 & 4.

Yes. The coffee turning black on the trees, and even the berries being light and the seed imperfectly formed.

No.

No.

No.

Thomas Hay

Bilthuis

14th July 1875

R 4072/75

Enclosure 1 in No. 6.

From Dr. G. H. K. THWAITES, to the Honorable the Colonial Secretary, dated Royal Botanic Gardens, Peradeniya, 6th October, 1874.

In complying with the request conveyed to me in your letter of the 22nd ultimo, I have the honor of handing you the questions I would suggest being sent to Her Majesty's Consuls or to other officers residing in countries where the coffee tree is cultivated to any extent.

I would also take the liberty to recommend that instructions be given that, when answers are sent to these questions, there should be forwarded with them dried specimens of stem or foliage illustrating the character of the disease.

Information respecting any other diseases affecting seriously the coffee or any other plants of economic importance might also be asked for, and specimens of the same forwarded to the Colonial Office.

In all cases it would be particularly desirable that, whether the injury to the plant result from the attacks of fungi or from those of insects, good examples of these pests should be sent for identification.

It may, perhaps, not be considered irrelevant my remarking that, according to my experience the obtaining such information as is desired from parties interested in the cultivation, is frequently attended with some difficulty, owing to an unwillingness on their part to acknowledge there may be any probability of the quantity or quality of their crops being seriously affected.

Extract from Dr. J. D. HOOKER'S letter, dated Kew, 23rd December, 1874, regarding the preparation of specimens.

These leaves should be carefully pressed flat between sheets of paper, and when dry, sent home in this state, also between pieces of paper. Short pieces of the wood with the bark on, or twigs, if these are affected, should be gently dried, and also sent home, carefully wrapped up in soft paper. All such specimens should be ticketed with any observations as to the age, size, condition, &c., of the plants from which they were taken.

Forwarded to H. Wapsham Esq. with the request he will favor the Commissioner with answers to the queries on the reverse - at the same time forwarding specimens prepared in accordance with instructions. The Commissioner
2nd June 1875
C. M. W. 3

Enclosure 2 in No. 6.

Questions.

HAVE the cultivated coffee trees in *Knickerbocker Valley* been observed to be affected by a disease which causes their leaves to become, at certain times and somewhat rapidly, marked with yellow spots or blotches, these leaves soon afterwards falling prematurely, leaving the branches of the trees quite bare or with only the unripe berries upon them?

2. Are the spots or blotches on the underside of the affected leaf covered, upon their first appearance, with dust of a pale orange colour easily rubbed off?

3. Do the trees seem to recover altogether from the disease, and then, after a certain period, exhibit all the previous symptoms of being infected by it?

4. When was the disease first observed in the Valley, and was it then confined to a particular locality, or was it spread over a large area?

5. Has it been observed under what conditions as regards climate, soil, or exposure the disease prevails more or less, and has it shown itself with much greater severity in some years than in others, and have these years been exceptionally wet or dry?

6. Has the disease been found to seriously diminish the amount of crop, and has the quality of the berries been injuriously affected by it?

7. Have any investigations been made, with the help of the microscope, into the nature of the disease, its mode of propagation, and how it is introduced into the coffee plant, and, if so, what has been the result of these investigations?

8. Have any other plants besides the coffee been found to be infested with this identical disease, as determined by the microscope?

9. Has any particular treatment as regards the manuring or littering of the coffee trees, or the application to them or to the soil in which they are growing of any mineral substances, such as sulphur, been found effective in curing the disease or in mitigating the severity of its periodical attacks?

The Chic Magalona tree is the only kind of Coffee tree in the Knickerbocker Valley which has been attacked by leaf disease. It is which have had the leaves marked with yellow spots or blotches - all affected leaves drop but in the Valley I have seen the branches left bare -

Yes -

The trees after being affected throw out new foliage - and they again exhibit all the previous symptoms.

The disease showed itself at the end of the S.W. Monsoon of 1873. It was not confined to a particular locality but to a particular class of trees as above stated. I have seen one of these trees grow although altogether isolated a mile away from others of its kind it was invariably affected, but not a sign of the disease was in the previous kind of the surrounding trees.

5. Climate is elevation - soil - or exposure in any position makes no difference - the disease appears to be getting worse.

6. The kind of tree that is attacked by the disease yields little or no crop - but the little that they do bear has undoubtedly suffered.

7. No investigations have been made.

I have seen no other plant infested by this disease.

Close Root Pruning followed by Manuring strengthens the tree, & there is little or no disease on trees thus treated.

Henry Wapshale;

I cannot send a specimen as the disease was not yet observed this year.

Enclosure 1 in No. 6.

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I would also take the liberty to recommend that instructions be given that, when answers are sent to these questions, there should be forwarded with them dried specimens of stem or foliage illustrating the character of the disease.

Information respecting any other diseases affecting seriously the coffee or any other plants of economic importance might also be asked for, and specimens of the same forwarded to the Colonial Office.

In all cases it would be particularly desirable that, whether the injury to the plant result from the attacks of fungi or from those of insects, good examples of these pests should be sent for identification.

It may, perhaps, not be considered irrelevant my remarking that, according to my experience the obtaining such information as is desired from parties interested in the cultivation, is frequently attended with some difficulty, owing to an unwillingness on their part to acknowledge there may be any probability of the quantity or quality of their crops being seriously affected.

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Forwarded to J. Staines Esq with the request he will favor the Commissioners with answers to the queries on the reverse at the same time forwarding specimens prepared in accordance with instructions.

*2nd June 1875
Comms. Wm.*

M. C. C.

June 1875

Questions.

Yes. first about 3 years ago

Yes —

yes -

The disease is generally confined to ridges - & poor soil

chiefly in dry matter and
about the month of Feb-
March

dicidol

from careful investigation with a powerful microscope I am of opinion it is a fungus produced by the state of the atmosphere & the want of certain alkalines in the soil.

I don't know

High Cultivation, i.e. manuring
with cattle manure

Thomas Stanes

3 August 1875

From Dr. G. H. K. THWAITES, to the Honorable the Colonial Secretary, dated
Royal Botanic Gardens, Peradeniya, 6th October, 1874.

In complying with the request conveyed to me in your letter of the 22nd ultimo, I have the honor of handing you the questions I would suggest being sent to Her Majesty's Consuls or to other officers residing in countries where the coffee tree is cultivated to any extent.

I would also take the liberty to recommend that instructions be given that, when answers are sent to these questions, there should be forwarded with them dried specimens of stem or foliage illustrating the character of the disease.

Information respecting any other diseases affecting seriously the coffee or any other plants of economic importance might also be asked for, and specimens of the same forwarded to the Colonial Office.

In all cases it would be particularly desirable that, whether the injury to the plant results from the attacks of fungi or from those of insects, good examples of these pests should be sent for identification.

It may, perhaps, not be considered irrelevant my remarking that, according to my experience the obtaining such information as is desired from parties interested in the cultivation, is frequently attended with some difficulty, owing to an unwillingness on their part to acknowledge there may be any probability of the quantity or quality of their crops being seriously affected.

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forwarded to Mr. Strickon Esq. with the request he will pass the Commissioner's certificate answers to the queries on the reverse at the same time forwarding specimens prepared in accordance with instructions.

Wm. M. M. M.
Commissioner

2nd June 1875
Carrickmore

To. J. R. Yachereu Poyre
Commissioner.

Neilgherries.

Enclosure 2 in No. 6.

Questions.

1. Have the cultivated coffee trees in Cutch been observed to be affected by a disease which causes their leaves to become, at certain times and somewhat rapidly, marked with yellow spots or blotches, these leaves soon afterwards falling prematurely, leaving the branches of the trees quite bare or with only the unripe berries upon them?

2. Are the spots or blotches on the underside of the affected leaf covered, upon their first appearance, with dust of a pale orange colour easily rubbed off?

3. Do the trees seem to recover altogether from the disease, and then, after a certain period, exhibit all the previous symptoms of being infected by it?

4. When was the disease first observed in Cutch, and was it then confined to a particular locality, or was it spread over a large area?

5. Has it been observed under what conditions as regards climate, soil, or exposure the disease prevails more or less, and has it shown itself with much greater severity in some years than in others, and have these years been exceptionally wet or dry?

6. Has the disease been found to seriously diminish the amount of crop, and has the quality of the berries been injuriously affected by it?

7. Have any investigations been made, with the help of the microscope, into the nature of the disease, its mode of propagation, and how it is introduced into the coffee plant, and, if so, what has been the result of these investigations?

8. Have any other plants besides the coffee been found to be infested with this identical disease, as determined by the microscope?

9. Has any particular treatment as regards the manuring or littering of the coffee trees, or the application of the soil in which they are growing or any mineral substances, such as sulphur, been found effective in curing the disease, or in mitigating the severity of its periodical attacks?

1. This pest, called leaf disease, first made its appearance in the Cutch district about three years ago, and with precisely similar symptoms to those described in question No. 1.

2. This is exactly their appearance.

3. Unless manured carefully, I have not found the trees throw off the disease and, within the last three years, I have found the disease leave a field & reappear. In the year 1871 towards the close, it began in a small field of about 5 acres & spread slowly, but surely, though not regularly, as it missed some fields, and appeared on others some distance off.

4. The disease was worse last year than in 1872, and in our district last year was very dry, & windy, the dry ridges suffered most, and were most exposed to the wind, and the berries were affected. By myself, none. It was 4 weeks more to the late than usual.

5. I have not observed the forest trees, or other plants surrounding my Estate, or the Cutch district to be infested.

6. I have found the trees infested with this disease, quite throw it off after being well manured with a small basket of cattle manure mixed with a basket of pulch, and all weeds and prunings buried in the pit with the manure; but regret to state that after about eighteen months, the disease again appeared, and did much damage, & it does not seem as if it would leave the trees again, until I can manure them. The above remarks apply to what has taken place within a short time, being on three years experience, the leaf disease I have seen to be very different from what I have seen in the Cutch district.

not having been prevalent in Cutch for three years ago.

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In complying with the request conveyed to me in your letter of the 22nd ultimo, I have the honor of handing you the questions I would suggest being sent to Her Majesty's Consuls or to other officers residing in countries where the coffee tree is cultivated to any extent.

I would also take the liberty to recommend that instructions be given that, when answers are sent to these questions, there should be forwarded with them dried specimens of stem or foliage illustrating the character of the disease.

Information respecting any other diseases affecting seriously the coffee or any other plants of economic importance might also be asked for, and specimens of the same forwarded to the Colonial Office.

In all cases it would be particularly desirable that, whether the injury to the plant result from the attacks of fungi or from those of insects, good examples of these pests should be sent for identification.

It may, perhaps, not be considered irrelevant my remarking that, according to my experience the obtaining such information as is desired from parties interested in the cultivation, is frequently attended with some difficulty, owing to an unwillingness on their part to acknowledge there may be any probability of the quantity or quality of their crops being seriously affected.

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Forwarded to Mr. L. Keilly - Neilgherries with the request he will favor the Commissioner with answers to the queries on the reverse.

2nd June 1875
C. M. M.

the disease in 1871

Enclosure 2 in No. 6.

Questions.

1. Have the cultivated coffee trees in the island been observed to be affected by a disease which causes their leaves to become, at certain times and somewhat rapidly, marked with yellow spots or blotches, these leaves soon afterwards falling prematurely, leaving the branches of the trees quite bare or with only the unripe berries upon them?

2. Are the spots or blotches on the underside of the affected leaf covered, upon their first appearance, with dust of a pale orange colour easily rubbed off?

3. Do the trees seem to recover altogether from the disease, and then, after a certain period, exhibit all the previous symptoms of being infected by it?

4. When was the disease first observed in the island, and was it then confined to a particular locality, or was it spread over a large area?

5. Has it been observed under what conditions as regards climate, soil, or exposure the disease prevails more or less, and has it shown itself with much greater severity in some years than in others, and have these years been exceptionally wet or dry?

6. Has the disease been found to seriously diminish the amount of crop, and has the quality of the berries been injuriously affected by it?

7. Have any investigations been made, with the help of the microscope, into the nature of the disease, its mode of propagation, and how it is introduced into the coffee plant, and, if so, what has been the result of these investigations?

8. Have any other plants besides the coffee been found to be infested with this identical disease, as determined by the microscope?

9. Has any particular treatment as regards the manuring or littering of the coffee trees, or the application to them or to the soil in which they are growing of any mineral substances, such as sulphur, been found effective in curing the disease or in mitigating the severity of its periodical attacks?

Yes. I have observed the disease on small portions of Estate, here & there

all 12-6-76

I have not noticed any small leaves infected. They usually turn yellow with a black spot. The trees recover the year after being infected, and in some places it does not grow the second year. I have noticed small black spots on high ridges, where the soil was poor, and it was confirmed to a small portion of estate.

The disease has been observed both on low and high elevations and the season was May.

The disease has been worse when there was a heavy crop on trees and the leaves were green, it turned yellow to black and was not fit to eat.

No investigation has been made by me with help of microscope.

I have observed the disease in no other trees but coffee.

I manured heavily & removed the fruits infected and used lime which I found beneficial.

W. H. H. 20th July 1875

Lo

The Commissioner
Hail Herries

Sir

I have the honor to reply herewith to the questions contained in your circular dated 2nd June -

I am unable to send you in specimens of the disease as I am happy to say, I have not a single plant on the Estate infected with it at present.

I reply to your questions according to their numbers -

I have the honor to be
Sir

Your obedient servant
Geo Higgins

Answers to questions
1st The Coffee trees here have been for the past 3 years infected with the disease you describe

2nd The spots on the leaves are covered with a dust similar in colour to iron rust which rubs off easily -

3rd When the plants, infected, are pruned and manured they recover themselves rapidly, I have observed that plants infected so are not troubled with the disease the following year.

4th I first noticed the disease in 1872

1872 all the plantations out here were
affected by it, but not to a large extent
it was in 1873 that it commenced to spread
over large fields of Coffee -

5th The disease does not seem to
restrict itself to any certain locality,
we see it on ridges that are perfectly dry
and in hollows that are continually
damp, parts of an Estate that are shel-
tered seem to be as liable to it as unshel-
tered places, but in all cases the effects
are the same, the disease generally shows
itself in August and September, which are
wet months, we suffered most from it
during the North East Monsoon of 1873

6th The disease causes a large amount
of the unripened berries to fall and we
then on the trees, but I do not think that
the quality of those that remain, are in
any way affected except as regards
weight, as I have noticed in the season of
1873-1874 that the Coffee was lighter than in
previous years, Crops from this place
generally averaging 89 bushels of Parchment
to the Low, but in the seasons named the
average of out turn, was as light as 92
to the Low, I estimate that the loss on
this place by unripe berries falling from
the plants amounted in the season 73-74 to
about 15 Lows or one fourth of the whole
crop

7th I have been unable to make
any investigations into the nature

ature of the disease

8th I am not aware of any other
plants being infected with the same
disease

9th The treatment I have found effec-
tual in bringing the plants round
again is a heavy dressing accompanied
by a liberal dressing of Cattle Manure
forked in about the roots, I find that
parts of the plantation treated in this
way in 1843 have been quite free
from the disease ever since

Coffee - Leaf-disease
Hygiene Mr Geo
summers the
in Farmington Conn
for regarding coffee
leaf disease

Dated 20th } July 1850
Recd 30th }

Mr Geo Hygiene
Farmington