M.R.O. 1—77,006—8-6-37.

(1) Number of pages 26

(2) Date of repair 14-6-38

(3) Initials of the Referencer

MADRAS RECORD OFFICE.

Government of Madras.

Revenue DEPARTMENT.

G.O. No. 978 Press / Mis. -

Dated 12-9- 1873.

Not to be folded or roughly handled

14/6/38

No. 90. Read the following letter from J. R. COCKERELL, Esq., Commissioner of the Nilgiris, to the Hon. R. A. DALYELL, Acting Secretary to Government, Revenue Department, dated Ootacamund, 19th July 1873, No. 32 :—

I HAVE the honour to enclose a letter from Mr. McIvor in reply to G. O., dated 14th October 1872, No. 1,418.

2. Mr. McIvor submits that the Nilgiri plantations have proved themselves so singularly free from canker that it is unlikely 327 Cinchona plants, exported for the Sikkim plantations, were on exportation affected with the disease ; more especially as every precaution was taken to send away healthy plants, and the plants were chosen by skilled persons despatched from Bengal to select them.

3. From the same circumstance of the healthiness of the Nilgiri plantations, Mr. McIvor submits that other plants despatched must, in all probability, have been equally free from disease.

4. Mr. McIvor further submits that the written evidence recorded at the time shows all the Nilgiri plants to which it refers were healthy, and that it is only ten years afterwards that their freedom from disease on quitting the Nilgiris is called in question, and, then, upon the *recollection* of gentlemen interested in the propagation of the plants in Bengal.

5. Finally, Mr. McIvor defends himself against the imputations of inaccuracy brought against him by the witnesses on whom Dr. King relies, and submits that the witnesses have fallen into error in every instance they cite.

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, 12th July 1873, No. 33.

I HAVE the honour to acknowledge Government Official Memorandum, Revenue Department, No. 97, dated 7th of May last, desiring to know whether I have any remarks to make on a letter of the Government of India, recorded in G. O., dated 14th October 1872, No. 1,418, in which the Government of India arrive at the conclusion that "canker is shown to have existed in the plants originally sent up from the Nilgiris as stock for the Sikkim plantations."

2. The Government of India form this decision upon an inquiry conducted by Dr. King, Superintendent of the Cinchona Cultivation in Bengal. Dr. King encloses in his report the evidence upon which he bases his judgment.

3. I shall venture first to remark upon Dr. King's arguments and summing up, and will then cursorily meet the adverse statements in the evidence he adduces.

4. Dr. King remarks in paragraph 4 of his letter : "It appears Mr. McIvor is not inclined to admit that any plants sent by him from the Nilgiri plantations to Sikkim, for either the Government plantation or that of the Cinchona Association, could, on arrival in Sikkim, have been affected with the disease which he calls canker." I beg to submit that my position as thus described by Dr. King is not the position I have adopted, and which I maintain. My position is not that the plants when received at Sikkim were not tainted with canker, but that there was no taint on the plants when they quitted the Nilgiris. I can only argue on the condition of the plants as they left my hands. Obviously I can know nothing of the condition in which they reached the Himalaya mountains. The distinction is of the utmost importance. My argument is that the plants left the Nilgiris free from disease, and that, if they reached the Himalayas as it is now stated they did with canker, they contracted the malady on the road.

5. I will proceed to show how probable it is that such a state of things occurred. I must first, however, meet the argument of Dr. King in paragraph 5 of his letter to the effect that argument from probability is negative argument. I oppose to this objection that Dr. King, while condemning a negative argument in me, is driven to a negative argument himself. In paragraph 4 of his letter, he admits that Dr. Anderson did not, as a matter of fact, mention in any of his reports the existence of canker in the Nilgiri plants ; and he accounts for his silence by the negative argument that Dr. Anderson probably " did not think it (canker) worth mentioning." This argument of Dr. King even goes beyond the point of mere negation ; for Dr. Anderson does not merely pass over the existence of canker in the Nilgiri plants, and so leave it to be inferred the possibility of the existence of canker, but he states at paragraph 6 of his letter, dated 11th February 1862, which was written from Calcutta after the arrival of the Nilgiri plants there, that the plants were " as healthy as they were at Ootacamund." At paragraph 2 of the same communication, speaking of the plants on the Nilgiris, he says : " Under such favourable circumstances the plants receive at once every condition necessary to their perfect health." In fact, all Dr. Anderson's reports of the Nilgiri plants not only make no mention of canker, but positively say the plants come from a healthy source, and are healthy. The matter stands thus : speaking of circumstances ten years after the event, which cannot be decided on evidence recorded at the time, Dr. King and I are both driven to negative arguments. I submit that, from the nature of the case, only negative arguments are possible.

6. Following this train of argument I shall, as I hope, demonstrate—

1*st*,—That it is extremely unlikely the plants from the Nilgiris were affected with canker when they left the Nilgiris ;

2*nd*,—That it is, on the other hand, highly probable that the plants spontaneously generated canker on their journey to Sikkim.

7. Upon the first point it is only necessary to say that Dr King, in his letter under discussion, admits, at paragraph 11, the infrequency of canker on the Nilgiris. He says : " I saw examples of both forms of disease in the Cinchona plantations on the Nilgiris during my recent visit to them, although neither is common there ;" and to add that on the Nilgiris the Government plantations cover 1,200 acres, and only 600 cankered trees have been discovered since the commencement. I refer also to paragraph 2 of Dr. Anderson's letter quoted above, and to the fact well known to physiologists, from the late eminent Mr. Knight downwards, that canker, even if introduced to a climate unfavourable to its diffusion, is arrested. The fact of canker never having gained a footing on the Nilgiris shows the Nilgiris possesses such a climate, and the inevitable inference appears to be that the plants did not leave the Nilgiris cankered.

8. The next point requires me, in the first instance, to demonstrate the nature of canker, and the conclusion that it might probably have been spontaneously generated between the date the plants left the Nilgiris and their arrival at Sikkim.

9. Upon the nature of canker it is stated in Loudon's Suburban Horticulturist, Chapter VI., page 123, and Lindley's Gardeners' Chronicle, page 283, 2nd May 1846, canker is a disease caused by " unsuitableness of soil, unpropitiousness of climate, and want of access of air." The disease disappears when these conditions are changed. Mr. Scott, in his evidence before the Cinchona Commission, allows this ; for he says, in reply to a question, " Would you willingly propagate from a cankered stock-plant ? " " As readily as from a healthy plant, provided I could find a healthy shoot to make a cutting of." The answer shows that, in his opinion, Mr. Scott could get rid of canker by judicious treatment ; for it is clear that if the healthy shoot from a cankered plant was placed in unfavourable conditions, it would continue to develop disease.

10. But hypothesis is not needed in the matter, as we have positive proof that canker arises from damp in wardian cases. The whole of the plants conveyed to Java from South America in twenty wardian cases by Dr. Hasskarl were so affected with disease that, as stated by Dr. McPherson to the Madras Government, dated 19th December 1860, paragraph 8, " most of the young trees on being planted out speedily died, and of all the trees imported only two survived." With some of the consignments sent to India from South America the loss was even more complete. The whole stock of Calisaya collected by Mr. Markham perished from confinement in wardian cases.

Proceedings of the Madras Government, Revenue Department,
12th September 1873.

The entire collection of Mr. Pritchett similarly perished before arrival in Bombay, and the only plants which survived long confinement in cases were those brought by Mr. Cross to Madras. These plants survived, because Mr. Cross kept the cases open, and daily forked up the earth about the roots. From these latter plants the Nilgiri stock was raised.

11. The opinion of Mr. Scott accords with these facts. Mr. Scott says in the correspondence under reference : " Even supposing, however, that the plants were perfectly free from the disease when lifted out and despatched in wardian cases from the Nilgiris for Sikkim, I am quite of opinion that it might have originated during the journey, if the plants were kept in a wet soil and a close, hot, and moist atmosphere."

12. Thus it is shown positively that canker appears in wardian cases. And what was the treatment the Nilgiri plants received on the journey to Sikkim ? Upon this point Dr. Anderson, in his report from the 1st April 1862 to 30th April 1863, writes: " That owing to the highly unfavourable circumstances in which the plants were placed after their arrival in Darjeeling, I was obliged to keep the Cinchona plants confined for two months in wardian cases, some of them having been already subjected to five months of this confinement." Further Dr. Anderson writes : " No packages of any kind ever reached Darjeeling from Calcutta in less than six weeks ; the usual time occupied in the transit being two months." In fine, Dr. Anderson proves to demonstration that the time all plants passed in wardian cases in their journey from the Nilgiris to the Himalayas was invariably sufficient to generate canker.

13. I have, in my report on the Sikkim plantations, stated my opinion that the climate of Sikkim is favourable to the development of canker. Even, therefore, if the extreme supposition was adopted that the Nilgiri plants escaped the peril of the journey to Sikkim, on their arrival they would have been placed in conditions adverse to health. The climate of Sikkim is condemned for Cinchona by Mr. Gammie, who writes in paragraph 1 of his letter, Enclosure 4 in the letter of the Government of India : " I have every reason to believe that canker showed itself in the plants immediately after their arrival from Madras, but, at the same time, I think had even quite healthy plants been received, there would have been more or less canker in the Sikkim plantations."

14. The climate of Rungbee is much like the climate of the Travancore States, and is, I believe, too moist for Cinchona. I had the honour to report on the Travancore Government Cinchona Plantations in September 1872. I found the trees there permeated with canker. I am informed that they have now actually died out, and it is the intention to plant coffee on the sites. It will be seen in this report, and I beg to draw attention to the fact that I show there, that canker is a disease not only of the bark of Cinchona, but which attacks the roots also. From the correspondence now under reference, it seems that the Bengal authorities are under a misapprehension, and refer canker only to bark-disease.

15. I have thus endeavoured to show—

1*st*,—That it is not probable the plants should have had canker when they left the Nilgiris, as they were forwarded from a pure source ;

2*nd*,—That nothing was easier than from them to contract the disease during their journey to Sikkim ; and,

3*rd*,—That, in the extreme supposition that they escaped the peril of the journey, Sikkim has a climate and soil, described by the most eminent physiologists, as presenting conditions favourable to the origination of canker.

16. I will now address myself to minor points and to the inaccuracies ascribed to me by the witnesses cited by Dr. King.

17. Stress is laid by Dr. King on the evidence of Mr. Jaffrey, who, Dr. King states, has been on the Government plantation since its commencement. This is an error. Mr. Stubbs was originally in charge. Mr. Jaffrey took charge on the 13th of September 1862, or nine months afterwards. The statement is made at paragraph 2 of Dr. Anderson's report, 1862-63. Thus Mr. Jaffrey had no means of knowing the state of the original stock of plants until nine months after they had been submitted to the adverse climate of Sikkim.

18. In his evidence referred to by Dr. King, it is stated by Mr. Jaffrey: "I received, during April 1863, 327 plants from the Nilgiris, amongst which canker was fully developed." It is worthy of remark that Mr. Jaffrey made no mention of so important a fact until 1872, and withheld it in his evidence before the Cinchona Commission in 1871. The following are the facts with regard to these 327 plants:—Dr. Anderson sent down a European gardener and a Mallee from Calcutta to select and pack them; he writes, on the 9th March 1863, to the late Sir W. Denison, then Governor of Madras: "You will probably like to hear that the Cinchona plants supplied to me from Ootacamund arrived here in excellent condition, and are still in this garden (Botanic, Calcutta), and have grown much, most of them having made three pairs of leaves since their arrival here." Referring to these plants after their arrival in Darjeeling, he writes: "Of the original No. 350 received from Madras, only twenty-three had been lost between Calcutta and Darjeeling."

19. Referring to plants subsequently received by the Darjeeling Cinchona Association, Mr. Jaffrey, at paragraph 3 of his present letter, attributes their destruction "to their weakness and the wretched soil in which they had been transmitted." It may be permitted me to remark on the singularity of the circumstance, that taking the 327 plants received in April 1863 to have been affected with canker immediately recognizable by Mr. Jaffrey, and not to have been, as Mr. Anderson stated, quite healthy. Mr. Jaffrey could not detect the disease in plants received months afterwards, and was driven to attribute their decay to weakness and soil.

20. With regard to the evidence of Mr. Munro, referred to in paragraphs 5, 6, and 7 of Dr. King's letter, I observe that it shows the plants it refers to were received from a third party; that they were not ordered by Mr. Munro or for him; and he did not pay for them. This is the reason his name does not appear in my books.

21. With regard to the evidence of Mr. Munro before the Cinchona Commission, to which I took exception at the time, I wish to remark that, whether Mr. Munro refers in it to the first plants sent to Government or to the Darjeeling Cinchona Association, he was not qualified to give an opinion, as he was not in India when the plants were received. Mr. Munro, in paragraph 4 of his present letter, says: "Of the first consignment I know nothing." Dr. Simpson also states that the first instalment of plants was received long before the arrival of Mr. Munro. Notwithstanding this, Mr. Munro, in his evidence, said: "We received our first cuttings from the Nilgiris, and they were extensively affected with canker." The only plants upon the condition of which Mr. Munro was in a position to pronounce on their arrival on the Himalayas formed the *last batch*. With regard to these plants Mr. Munro is silent in his evidence.

22. In his present letter, he speaks of the plants thus. He writes: "They showed symptoms of the disease we have since learned to call canker, as soon as it could be distinguished from injuries received during the journey." Mr. Munro does not state how long this interval was. The records would indicate it as an interval of many years after the arrival of the last instalment of plants in Sikkim.

23. Mr. Munro accuses me of inaccuracy with regard to some seeds I supplied the Association. He writes in his present letter: "Mr. McIvor takes care not to mention the quantity of seeds sent. I will do so for him. It was of *C. Succirubra* ½ ounce." The letters noted in the margin, taken from my records, show that the quantity sent was 7½ ounces. I sent also about 2 ounces by pattern-post. My copy of the covering letter to this last consignment is mislaid, but no doubt the letter will be found on the records of the Association.

Date of Letters advising despatch of Seeds.		Oz.	Date of Application for, and acknowledgment of, Seeds sent.	
23rd August 1866.	C. Succirubra	...1	W. Bourne, Esq.	Calcutta, 30th June 1866.
	C. officinalis	...1		Calcutta, 4th April 1867.
May 1867, copy of covering letter mislaid.	(Estimated)	...2		
18th March 1868.	C. Succirubra	...1	Col. J. A. Angus.	Darjeeling, 29th February 1868.
	C. officinalis	... ½		
	C. Micrantha	...1		
19th May 1868...	C. Succirubra	...1		
	C. officinalis	...3	W. Lloyd, Esq.	4th May 1868.
	Total...	9½		

24. Dr. King, at paragraph 9 of his communication, calls in question my statement that the "Sikkim stock of Pahudiana, raised solely from Java plants, has also been destroyed by canker." He further expresses his surprise that I should be ignorant that the Pahudiana produces no quinine, and was on that account abandoned. In reply, I observe that it was I who brought the fact of the unproductiveness of the species in question to notice in my letter to Government of August 1861. I was aware the cultivation of the species has been stopped by the Secretary of State. But all this has nothing to do with the fact to which I alluded, namely, that of the 5,092 Pahudiana plants put out at Sikkim in 1865, all were affected with canker, and many had died out at the date of my visit in 1871.

25. Dr. King states, in paragraph 10 of his letter: "A third mistake into which Mr. McIvor has fallen in this same paragraph 7 is that of saying that the Java variety of *C. Calisaya* (*C. Josephiana*) has been so affected by canker that only one plant existed on the Sikkim plantations at the date of my visit in February 1871, out of all the seeds and plants received of this variety; whereas Mr. Gammie, in the concluding paragraph of his memorandum, estimates the number at 8,000." It is Dr. King who has here fallen into error; he confounds *C. Calisaya* and *C. Josephiana Calisaya*. Mr. Gammie does not speak in the memorandum at all of *C. Josephiana*.

26. Mr. Gammie apparently implies, at paragraph 5 of his letter, that all the varieties of tree Calisaya on the Sikkim plantation were raised from Java seeds. This is erroneous: all the varieties but one were raised from Mr. Ledger's collection of seeds purchased and imported to India by Mr. Money. The Dutch obtained the varieties in question also from Mr Ledger's collection, having previously had only one variety of tree Calisaya.

27. I have omitted to notice that, at paragraph 4 of his letter, Mr. Gammie states that I am mistaken in my impression that the cultivation of *C. officinalis* was abandoned on account of canker: but adds: "*C. officinalis* certainly died out but from the roots, and not from what I understand to be canker which affects the bark and not the root. On the 31st of March 1870 there were 930,704 plants of *C. officinalis* in the Government plantations in British Sikkim, of which 406,899 were in permanent plantations. On the 5th July 1872, Mr. Gammie informs us that these plants had certainly died out. I should remark here that these plants were raised from stock received from Ceylon, and not from the Nilgiris, and that they were raised principally from seeds. Their disappearance is attributable to nothing but canker, which, as I have shown above, attacks roots as well as bark.

Report on the Bengal Cinchona Plantations, dated Calcutta, 29th April 1870.

No. 91. ORDER THEREON, 12th September 1873, No. 978.

Miscellaneous.

THE foregoing papers will be communicated to the Government of India, with reference to their Agricultural Secretary's letter, dated 1st October 1872, No. 418, and with the request that they may be published in the *Gazette of India* in continuation of previous correspondence.

2. It appears to the Governor in Council that Mr. McIvor has shown that it is extremely improbable that canker existed in the plants originally sent up from the Nilgiris as stock for the Sikkim plantations, though it is possible that the disease may have been generated on the journey.

(True Extract.)

(Signed) R. A. DALYELL,
Acting Secretary to Government.

To the Commissioner of the Nilgiris.

Exd. F. R. Bantleman.

Govt. of [1873] Madras
REVENUE.
To
THE COMMISSIONER OF THE NILGIRIS
Dated September 12th.
Read.
Ans.
G. O., 12th September 1873, No. 979.
SEPTEMBER.
Nos. 90-91.

Cinchona Plants sent to Sikkim.—Resolving to communicate to the Government of India Paper showing that it is impossible that canker existed in the — and to request that they may be published in the *Gazette of India* in continuation of previous correspondence.

No. 33 Government Gardens
Ootacamund 12th July 1873.

From,

W. G. McIvor Esqre
Supt. Govt. Chinchona Plantations

To,

J. R. Cockerell Esqre
Commissioner of the Nilgiris
Ootacamund

Sir,

I have the honor to acknowledge Govt. Official Memorandum, Revenue Department, No. 97 dated 7th of May last, desiring to know whether I have any remarks to make on a letter of the Govt. of India recorded in G. O. dated 14th October 1872. No. 1418 in which the Govt. of India arrive at the conclusion that, "Canker is shewn to have "existed in the plants originally sent up from "the Nilgiris as stock for the Sikkim Plantations".

2 The Govt. of India form this decision upon an inquiry conducted by Dr. King Supt. of the Chinchona Cultivation in Bengal. Dr. King encloses in his report the evidence upon which he bases his judgment.

3. I shall venture first to remark

upon

say the plants come from a healthy source and are healthy. The matter stands thus. Speaking of circumstances few years after the event, which cannot be decided on evidence recorded at the time, Dr. King and I are both driven to negative arguments. I submit that from the nature of the case, only negative arguments are possible.

6 Following this train of argument I shall as I hope demonstrate:-

1st that it is extremely unlikely the plants from the Nilgiris were affected with canker when they left the Nilgiris.

2d that it is on the other hand highly probable that the plants spontaneously generated canker on their journey to Sikkim.

7 Upon the first point it is only necessary to say that Dr. King in his letter under discussion admits at Para 11 the infre= =quency of Canker on the Nilgiris. He says, "I saw examples of both forms of disease in "the Chinchona Plantns" on the Nilgiris during "my recent visit to them altho' neither is "common there", and to add that on the Nilgiris the Govt Plantns" cover 1200 acres, and only 600 cankered trees have been discovered since the commencement. I refer also to Para 2 of Dr Anderson's letter quoted above, and to the

the fact well known to physiologists, from the late eminent Mr Knight downwards, that canker even if introduced to a climate unfa= =vorable to its diffusion, is arrested. The fact of canker never having gained a footing on the Nilgiris shows the Nilgiris possesses such a climate, and the irritable inference appears to be, that the plants did not leave the Nilgiris cankered.

8 The next point requires me in the first instance, to demonstrate the nature of canker, and the conclusion that it might probably have been spontaneously generated between the date the plants left the Nilgiris, and their arrival at Sikkim.

9 Upon the nature of canker it is stated in Londons Suburban Horticulturist Cap: VI Page 123, and Lindleys Gardeners Chronicle Page 283, 2 May 1846, Canker is a disease caused by "insuitable= ="ness of soil, unpropitiousness of climate, and "want of access of air". The disease disappears when these conditions are changed. Mr Scott in his evidence before the Chinchona Commission allows this, for he says in reply to a question, "Would "you willingly propagate from a cankered stock plant"?

plant?" "As readily as from a healthy plant,
"provided I could find a healthy shoot to make a
"cutting of." The answer shows that in his opinion
Mr Scott could get rid of canker by judicious treat=
=ment, for it is clear that if the healthy shoot from
a cankered plant was placed in unfavorable conditions,
it would continue to develope disease.

10 But hypothesis is not needed in the
matter, as we have positive proof that canker
arises from damp in Wardian cases. The whole of
the plants conveyed to Java from South America
in 20 Wardian cases by Dr Hasskarl, were so
affected with disease, that as stated by Dr M^c
Pherson to the Madras Govt dated 19th December 1860
Para 8, "most of the young trees on being planted
"out speedily died, and of all the trees imported
"only 2 survived". With some of the consignments
sent to India from South America the loss was even
more complete. The whole stock of Calisaya
collected by Mr Markham perished from confinement
in Wardian cases. The entire collection of Mr
Pritchett similarly perished, before arrival in
Bombay, and the only plants which survived long
confinement in cases, were those brought by Mr
Cross to Madras. These plants survived because

Mr

Mr Cross kept the cases open and daily forked
up the earth about the roots. From these latter
plants the Kilgiri stock was raised.

11 The opinion of Mr Scott accords with
these facts. Mr Scott says in the correspondence
under reference, "Even supposing however that the
"plants were perfectly free from the disease when
"lifted out and despatched in Wardian cases from
"the Kilgiris for Sikkim, I am quite of opinion that
"it might have originated during the journey
"if the plants were kept in a wet soil and a close
"hot and moist atmosphere."

12 Thus it is shown positively that
canker appears in Wardian cases. And what was
the treatment the Kilgiri plants received on the
journey to Sikkim? Upon this point Dr Anderson
in his report from the 1st April 1862 to 30th April 1863
writes, that owing to the "highly unfavorable cir=
=cumstances in which the plants were placed"
after their arrival in Darjeeling, "I was obliged
"to keep the Chinchona plants confined for 2
"months in Wardian cases some of them having
"been already subjected to 5 months of this
"confinement". Further Dr Anderson writes, "No
"packages of any kind ever reached Darjeeling from
"Calcutta in less than 6 weeks, the usual time
"occupied in the transit being 2 months." In

fine

fine, Dr. Anderson proves to demonstration, that the time all plants passed in Wardian cases in their journey from the Nilgiris to the Himalayas was invariably sufficient to generate canker.

13 I have in my report on the Sikkim Plantns stated my opinion that the climate of Sikkim is favorable to the development of canker. Even therefore if the extreme supposition was adopted that the Nilgiri plants escaped the peril of the journey to Sikkim, on their arrival they would have been placed in conditions adverse to health. The climate of Sikkim is condemned for Chinchona by Mr. Gammie who writes in Para 1 of his letter, enclosure IV in the letter of the Govt. of India. "I have every reason "to believe that canker showed itself in the plants "immediately after their arrival from Madras - "but at the same time I think had even quite as "healthy plants been received there would have "been more or less canker in the Sikkim Plantns"

14 The climate of Ruingbee is much like the climate of the Travancore States, and is, I believe, too moist for Chinchona. I had the honor to report on the Travancore Govt. Chinchona Plantns in Sept. 72. I found the trees there permeated with canker. I am informed that they have now actually died out, and it is the intention to plant coffee on the sites. It will be seen in this report, and I beg to draw attention to the fact, that I show there that canker is a disease not only of the bark of Chinchona but which attacks the roots also. From the cor= =respondence now under reference it seems that the Bengal authorities are under a misapprehension and refer canker only to bark disease.

15 I have thus endeavored to show:-

1st that it is not probable the plants should have had canker when they left the Nilgiris, as they were forwarded from a pure source.

2d that nothing was easier than from them to contract the disease during their journey to Sikkim and,

3rd that in the extreme supposition that they escaped the peril of the journey, Sikkim has a climate and soil described by the most eminent physiologists as presenting conditions favorable to the origination of canker.

16 I will now address myself to minor points and to the inaccuracies ascribed to me by the witnesses cited by Dr. King.

17 Stress is laid by Dr. King on the evidence of Mr. Jaffrey, who Dr. King states, has been on the Govt. Plantn since its commencement. This is

is an error. Mr. Stubbs was originally in charge. Mr. Jaffrey took charge on the 13th of Sept. 1862 or nine months afterwards. The statement is made at Para 2 of Dr. Anderson's report 1862/63. Thus Mr. Jaffrey had no means of knowing the state of the original stock of plants until nine months after they had been submitted to the adverse climate of Sikkim.

18. In his evidence referred to by Dr. King it is stated by Mr. Jaffrey, "I received during "April 1863 - 327 plants from the Neilgherries "amongst which canker was fully developed".

It is worthy of remark that Mr. Jaffrey made no mention of so important a fact until 1872 and withheld it in his evidence before the Chinchona Commission in 1871. The following are the facts with regard to these 327 plants. Dr. Anderson sent down a European gardener and a mallee from Calcutta to select and pack them - he writes on the 9th March 1863 to the late Sir W. Denison then Governor of Madras "You will probably like to hear that the Chin= "-chona plants supplied to me from Cotacamund "arrived here in excellent condition and are "still in this garden (Botanic Calcutta) and "have grown much most of them having made "3 pairs of leaves since their arrival here."

Referring to these plants after their arrival in Darjeeling he writes, "Of the original No 350 "received from Madras only 23 had been lost "between Calcutta and Darjeeling".

19 Referring to plants subsequently received by the Darjeeling Chinchona Association Mr. Jaffrey at Para 3 of his present letter attributes their destruction "to their weakness and the "wretched soil in which they had been transmitted" It may be permitted me to remark on the singularity of the circumstance, that taking the 327 plants received in April 1863 to have been affected with canker immediately recognizable by Mr. Jaffrey and not to have been as Dr. Anderson stated quite healthy - Mr. Jaffrey could not detect the disease in plants received months afterwards and was driven to attribute their decay to weakness and soil.

20 With regard to the evidence of Mr. Munro referred to in Para 5, 6, & 7 of Dr. King's letter, I observe that it shows the plants it refers to, were received from a third party, that they were not ordered by Mr. Munro, or for him, and he did not pay for them. This is the reason his name does not appear in my books.

21. With regard to the evidence of Mr. Munro before the Chinchona Commission to which

which I took exception at the time, I wish to remark that whether Mr. Munro refers in it to the first plants sent to Govt or to the Darjeeling Chinchona Association, he was not qualified to give an opinion, as he was not in India when ~~copy of~~ the plants were received. Mr. Munro in Para 4 of his present letter says, "of "the first consignment I know nothing" Dr. Simpson also states that the first instalment of plants was received long before the arrival of Mr. Munro. Notwithstanding this Mr. Munro in his evidence said, "we received our first "cuttings from the Wilgiris and they were "extensively affected with Canker". The only plants upon the condition of which Mr. Munro was in a position to pronounce on their arrival on the Himalayas, formed the last batch. With regard to these plants Mr. Munro is silent in his evidence.

22 In his present letter he speaks of the plants thus - He writes, "They showed "symptoms of the disease we have since "learned to call canker, as soon as it could be "distinguished from injuries received during "the journey". Mr. Munro does not state how long this interval was. The records would indicate it as an interval of many years after

the arrival of the last instalment of plants in Sikkim.

23 Mr. Munro accuses me of inaccuracy with regard to some seeds I supplied the Asso=ciation. He writes in his present letter "Mr "M^c Ivor takes care not to mention the quantity "of seeds sent. I will do so "for him. It was of C. Succirubra "1/4 oz." The letters noted in the margin taken from my records show that the quantity sent was 7 1/2 ozs. I sent also about 2 oz by Pattern post. My copy of the covering letter to this last consignment is mislaid but no doubt the letter will be found on the records of the Association.

Date of letters advising despatch of seeds		Date of application for & acknowledgment of seeds sent	
23^d Augt /66	C. Succirubra 1 / C. Officinalis - 1	R. Bourne Esq	Calcutta 30^th June /66
May /67. Copy of covering ^es letter mislaid	(Estimated) 2	Do	" 4^th April /67
18^th March /68	C. Succirubra 1 / C. Officinalis 1/2 / C. Micrantha 1	Col. J.A. Bruce	Darjeeling 29^th Feby /68
		Do	1^st April /68
19^th May /68	C. Succirubra 1 / C. Officinalis - 2		
	Ozs. 9 1/2	R. Lloyd Esq	4^th May 1868

24 Dr. King at Para 9 of his communication, calls in question my statement that the "Sikkim "stock of Pahudiana raised solely from Java plants "has also been destroyed by Canker". He further expresses his surprise that I should be ignorant that the Pahudiana produces no quinine and was on that account abandoned. In reply I observe that it was I who brought the fact of the improduc=tiveness of the species in question, to notice in my letter to Govt of August 1866. I was aware the cultivation of the species had been stopped by

the

Secretary of State. But all this has nothing to do with the fact to which I alluded viz. that of the 5092 Pahudiana plants put out at Sikkim in 1865 all were affected with canker, and many had died out at the date of my visit in 1871.

25 Dr. King states in Para 10 of his letter, "a third mistake into which Mr. M^c Ivor has fallen "in this same Para 7 is that of saying that the "Java variety of C. Calisaya (C. Josephiana) has "been so affected by canker that only one plant "existed on the Sikkim Plants^{ns} at the date of my "visit in Febmary 1871. out of all the seeds & plants "received of this variety," whereas Mr. Gammie "in the concluding Para of his Memo. estimates "the number at 8000". It is Dr. King who has here fallen into error. he confounds C. Calisaya and C. Josephiana Calisaya. Mr. Gammie does not speak in the Memo. at all of C. Josephiana.

26 Mr. Gammie apparently implies at Para 5 of his letter that all the varieties of tree Calisaya on the Sikkim Plant^s were raised from Java seeds. This is erroneous all the varieties but one were raised from Mr. Ledger's collection of seeds purchased and imported to India by Mr. Money. The Dutch obtained the varieties in question also from Mr. Ledger's collection having previously had only one variety of tree Calisaya.

27 I have omitted to notice that at Para 4 of his letter Mr. Gammie states that I am

mistaken

mistaken in my impression that the cultivation of C. Officinalis was abandoned on account of canker, but adds, "C. Officinalis certainly died out but from "the roots and not from what I understand to be "canker which affects the bark and not the root". On the 31st of March 1870 there were 930,704 plants of C. Officinalis in the Govt Plant^{ns} in British Sikkim of which 406,899 were in permanent Plant^{ns}. On the 5th July 1872 Mr. Gammie informs us that these plants had certainly died out. I should remark here that these plants were raised from stock received from Ceylon and not from the Nilgiris, and that they were raised principally from seeds. Their disappearance is attributable to nothing but canker which as I have shown above attacks roots as well as bark.

Report on the Bengal Chinchona Plantations dated Calcutta 29 April 1870.

I have the honor to be
Sir
Your most obedient Serv^t

J. E. M^c Ivor

Supt. Govt Chinchona Plant^{ns}

Commissioner's Office
Ootacamund 19 July 1853

No 32

From.

J. R. Cockerell Esquire
Commissioner
Nilgiris

To.

The Secretary to Government
Revenue Department
Ootacamund

Sir.

I have the honor to enclose a letter from Dr Dr Jas in reply to Government Order dated 14 October 1852 No 1418.

2. Dr Dr Jas submits that the Nilgiris plantations have proved themselves so singularly free from canker that it is unlikely 327 cinchona plants exported for the Sikkim plantations were an exportation affected with the disease, more especially as every precaution was taken to send away healthy plants and the plants were chosen by skilled persons despatched from Bengal to select them.

3. From the same circumstances of the healthiness

healthiness of the Nilgiri plantations Dr. Dr. Dr. Door submits that other plants despatched must in all probability have been equally free from disease.

4. Dr. Dr. Door further submits that the written evidence recorded at the time shows all the Nilgiri plants on which it refers were healthy and that it is only 10 years afterwards that their freedom from disease on quitting the Nilgiris is called in question and then upon the recollection of gentlemen interested in the propagation of the plants in Bengal.

5 Finally Dr. Dr. Door defends himself against the imputations of inaccuracy brought against him by the witnesses on whom Dr. King relies and submits that the witnesses have fallen into error in every instance they cite.

I have the honor &c
Sir
Your most obedt Servt

H. Cockburn
Commissioner.

No. 14 October 1872 Nos 104-105

Recd 1873 Sept.
3
No. 2167

From
The Commissioner
Nilgiris

To
The Secretary to Govt
Revenue Dept
Ootacamund

Dated 19th July 1873
Received 21st

No. 32
Enclosure 1

Submitting Dr. McIvor's letter in reply to G. O. No. 1418 of 14th October 1872 regarding Cinchona plan[tations] sent to Sikkim

With Order.

+ [illegible] from the [illegible]
[illegible]
[illegible]
[illegible]

No. 978. 12 Sept. '73

The paper will be communicated to the Govt of India with reference to their Agricultural Secretary's letter dated 1st Jul 1872 No. 418, and with the request that this may be published in the Gazette of India in continuation of previous correspon[den]ce.

It appears to the G. in C. that Dr. McIvor has [illegible] ... carried in the plants originally shut up from the Nilgiris and took for the Sikkim plantations, think it is possible that the disease may have been generated [illegible]

seen [illegible]

To Commissioner of Nilgiris - Sept 20-9-73

c. 29 Aug. 73 28 Sept.