M.R.O. 14—10,000—11-4-22

MADRAS RECORD OFFICE.

Government of Madras.

Revenue **DEPARTMENT.**

G.O. No. 894

348

Dated 5 Sept. 1862.

Press Mis.

Not to be folded or roughly handled

PROCEEDINGS OF THE MADRAS GOVERNMENT.

Read the following Report of the Conservator of Forests:—

Submitting his report for the year 1860-61. } (Here enter 24th September 1861, No. 656.)

ORDER THEREON, 25th April 1862, No. 894.

1. The Government deem it useless at this late period to review this report in detail. They will therefore limit their remarks to a few subjects of importance.

Salem Forests.

2. The Penagram Forests of "Acha" wood on the banks of the Cávery are stated to be much injured by the Brinjaries and others who feed their cattle on the young branches of the trees. The attention of the Collector will be called to the subject through the Board of Revenue and he will be instructed to aid the Forest Department in arresting the further destruction of these Forests. The Government wish to know why these Forests if so valuable as represented, have not been conserved and worked by the Forest Department.

3. The Teak and Sandalwood plants in the Salem Forests are also stated to be destroyed by the Malialies and others setting fire to the jungles year after year. The Collector will use his best endeavors to prevent this practice.

Vide paragraphs 10 and 11, Appendix E.

4. The Collector will report through the Board of Revenue on the suggestion of Mr. Blenkinsop to levy a tax of 12 Annas upon each bandy load of bamboos, and of 6 Annas on each bandy load of fuel. The proposal to make the headman of each village answerable for all trees cut in his range cannot be entertained. The village Officers are bound to prevent, as far as they can, the spoliation of the Government Forests, and to afford every assistance in detecting offenders. If they fail in either respect they should be punished by the Collector, but it is the especial duty of the Conservancy Department to look after the Forests, and the Government cannot consent to relieve them of their responsibility.

Appendix E, paragraphs 13 and 14.

5. The suggestion in paragraph 18 to publish in the District Gazette the rules passed for the preservation of the jungles should be at once adopted; separate copies also should be struck off for circulation in the villages adjoining the jungles.

Neilgherry Sholas.

6. The proposal in paragraph 5 to make a good road to the Divi Forests has since been met to a certain extent by a grant of funds. The Assistant Conservator in charge of these Sholas requests in his Report (vide Appendix F,) the assistance of the Revenue authorities to prevent the cutting of young sapplings, the destruction of the newly planted Sholas by cattle. The Board's attention will be called to these points.

7. Major Babington states in paragraph 9 of his report that the contract for supplying firewood and charcoal is kept down by Colonel Woodfall who has been clearing land for a Coffee plantation in the vicinity of the Coonoor Ghat disposing of his wood to coolies at 6 pice the load. He proposes that a seignorage be levied on every load carried out of the plantation for sale, but this cannot be done unless the land was granted subject to this condition.

Tea Plantation.

8. The favorable account given of these plantations in paragraph 8 is gratifying, and the Government trust that Captain Morgan's expectations will be fully realized.

9. As to the suggestion (paragraph 9) to erect a Saw Mill at Ootacamund, the Government observe that in his report, dated 30th April 1860, Captain Morgan suggested that the Steam Saw Mill used at the Wellington Barracks should be removed to Ootacamund, but the Government do not concur in this proposition.

Vide page 160, Cleghorn's Forests and Gardens of South India.

Annamalais.

10. There was a large falling off in the sales of wood in this Forest. The decrease amounted to Rupees 23,182 or 34 per cent. The causes assigned are not satisfactory. The Government expect better results in 1861-62. Paragraph 10 of Captain Brine's report (Appendix A) in which he explains the state of the roads leading from the Forest will be referred to the Public Works Department. Paragraph 11 should receive the Acting Conservator's immediate attention. In that paragraph Captain Brine talks very highly of the portion of the Forest on the Anagundy Pass, and states that it is exceedingly rich in teak, Rosewood and other useful timber, but that it has never been worked. Many of these teak trees are stated to be 15 feet in girth, at a height of 4 feet from the ground. Such valuable resources should not be lost. Captain Morgan will procure and submit an early report on the expediency of working this portion of the Forest.

	Rs.
Sales in 1859-60	67,260
Do. in 1860-61	44,078
Decrease	23,182

Mudamallay Forest.

11. The proposal to renew the lease of the Mudamullay Forests should be separately submitted with full information.

Madura.

12. The proposal in paragraph 14 (Clause 2), to leave the collection of the Forest products to the Conservancy Department instead of renting them will be referred to the Board of Revenue for their opinion. The Sandalwood jungles on the Palatar Hills, alluded to in paragraph 11 of Appendix I, should be carefully preserved, and these trees which are large enough should be felled and sold.

South Canara.

13. In this District as well as in North Canara jealousy between the Revenue and Forests Departments is complained of. The Government cannot deal with vague and general assertions of this nature. The Assistant Conservators should bring to the notice of the Collector any instances which occur of want of willing co-operation on the part of the Revenue Officers of the District.

Cuddapah.

14. The observations in paragraph 17 (Clause 2), regarding the advantage of wooden sleepers over iron pot sleepers will be communicated to the Railway Department. The proposal in the same paragraph (Clause 3) to introduce planting in the jungles in Cuddapah and Salem should be separately submitted.

Firewood.

15. Any well considered suggestions which Captain Morgan may offer in regard to the preservation of firewood jungles will receive attention. The Government are not prepared to grow fuel for the public. They consider that this had better be left to private enterprise while the efforts of Government are restricted to preserving and making the most of the existing supply. The subject has already received attention in paragraph 6 of the Order of Government, dated 4th June 1859, No. 744, and the Board of Revenue have been requested to adopt measures to induce private parties to invest capital in plantations for firewood. The Tope Rules afford very liberal encouragement, and if the people do not plant it must be because other modes of employing capital are more remunerative. The Board will be requested to instruct Collectors to give every publicity to the rules under which land may be taken up for planting purposes.

Page 168, Cleghorn's Forests and Gardens of South India.

16. The suggestion to grow Inga dulcis on the sides of the Railway throughout the line instead of the prickly pear and the Aloe, will be communicated to the Railway Department.

Government Gardens, Ootacamund.

17. The Government are gratified to learn that these gardens have been considerably improved. Mr. Melvor's suggestion to have two Native Apprentices and one European or East Indian Apprentice gardeners is approved, and the altered rates* of salary which involve no additional expense are sanctioned.

	Rs.
* 1 European or East Indian Apprentice	20
2 Native do. at 7 Rupees each	14

Herbarium.

18. As there is no room for the Herbarium at the Museum and the Superintendent cannot look after it, it must for the present remain attached to the Conservator's Office.

Financial results.

19. The financial results of the year are not explained in the report, but are shown in a table attached to it. The actual profit of the year was Rupees 1,83,732 against Rupees 3,93,591 in the previous year. The decrease appears to be partly owing to the value of the Annamalai timber sold in 1858-59, but included in the accounts of 1859-60. The Board of Revenue will however be requested to submit without delay their report on the accounts for 1860-61, and to point out in it the main causes to which the decrease is owing.

	Rs.
Receipts	3,52,449
Disbursements	1,68,717
Gain	1,83,732

Vide paragraph 9 of the Order of Government, dated 30th April 1861, No. 958.

20. The Government learn with satisfaction that the Officers of the Department have performed their duties with zeal and ability.

21. The Government observe that the Report under consideration though dated 24th September 1861, only reached their Office on the 1st ultimo, nearly a year after the period to which it relates. The Government understand that this is owing to its being submitted in print; but in fact it ought to have been before Government three months before the date it bears. Such lengthened delay as has occurred in this case, renders the report practically almost useless.

22. Captain Morgan will take care that the report for 1861-62, due on the 30th instant, is submitted by the 30th June at the latest. He will also restrict himself to a detail of the operations of the year reported on, and its financial results. A progress report is not the place where such propositions as the Establishment of a Saw Mill, and the alteration of an Establishment should be brought forward. Such questions should be separately submitted for orders.

(True Extract.)

(Signed) J. D. SIM,
Secretary to Government.

To the Conservator of Forests.
" Public Works Department.
" Board of Revenue.
" Financial Railway Department.

Exd. T. McMootry.

6 Board has no to be acknowledged 6

8914 Revd Depte

Proceedings of the Madras Government
under date the 25th April 1862

Read a Report
of the Conservator of Forests
dated 24th September 1861. No. 656

The Government
deem it useless at this
late period to review this
report in detail. They will
therefore limit themselves
to a few subjects of importance.

Salem Forests

The Ponagaram Forest
of "Babul" wood on the banks
of the Cáuery are stated
to be much injured
to be ~~destroyed~~ by the Dungar
vies and others who feed
their cattle on the young
branches of the trees. The
attention of the Collector will
be called to the subject
through the Board of Revenue
and he will be instructed

6

to aid the Forest Depart-
ment in arresting the
perpetrators of this
~~property of Government~~ Forests.

The Government wish
to know why these Forests
if so valuable as represented,
have not been conserved
and watched by the Forest
Department.

3. The Teak and Sandal-
wood plants in the Salem
Forests are also stated to
be destroyed by the Malabars
and others cutting fire to the
jungles year after year.
The Collector will use his
best endeavours to prevent
this practice.

Vide paras 10 & 11 Appendix E.

4. The Collector will
report through the Board
of Revenue on the suggestion
of the Conservator of Forests to
have a Forest Guard
stationed

Appendix E. Paras 13 & 14.

each bandy load of bamboos
and of 6 annas on each bandy
load of fuel. The proposal
to make the headman of
each village answerable
for all trees cut in his
range cannot be entertained.
The village Officers are
bound to prevent, as far as
they can, the depredations
of the Government Forests
— and to afford every
assistance in detecting
Offenders. If they fail in
either respect they should
be punished by the Collr
but it is the especial
duty of the Conservancy
Establt to look after the
Forests and the Government
cannot consent to relieve
them of their responsibility.

5. The suggestion in
para 18 to publish in the
District

District Gazette the proper
papers for the preservation
of the jungles should be
at once adopted - separate
copies also should be struck
off for circulation in the
villages adjoining the jungles.

6. The proposal in Heidelberg Sholas
para 5 to make a good
road to the Divi Forests
has since been met
by a certain contract by
a grant of funds. The
Assistant Conservator in
charge of these sholas
requested in his Report
forming Appendix F the exact
nature of the Revenue authorities
to prevent the cutting of
young saplings. ~~The~~
~~removal & burning of the~~
~~grass by which among~~
~~them at the expense of the~~
~~Revenue authorities~~

~~4~~

the declaration of the newly
planted sholas by cattle.
The Board also cautioned
to be called to these parts.
~~The strictest injunctions should~~
~~be enforced, regarding~~
~~cutting by notables living~~
~~in the immediate vicinity of~~
~~the Forests. The Board would~~
~~request the Contractor to~~
~~report on the proposal~~

7. Major Badenoch
states in regard of Koreyhon
that the contract for supp-
plying firewood and
charcoal is kept down by
Colonel Woodgate who has
been clearing land for a coffee
plantation in the vicinity of
the Corner that disposing of
his wood to coolies at a price the
load. He proposes that a diagram
be carried on every load carried
out of the Plantation for sale
Cannot be done.
but this ~~cannot be done~~
unless the land was
~~by the Govt~~ granted subject to this
~~condition. The Board of Revenue will be~~
condition.
~~requested to report on this~~
~~proposal~~

Vide para 3 of the order of
Govt 9/4 28 Feb 1862 No 270.

~~subject~~

~~the Government reserve from~~
~~which will take the Cattle~~
~~allowed to~~

8. The favorable account given of these plantations in para 8 is gratifying & the Govt trust that Capt Morgan's expectations will be fully realized.

Jav. Plantations

9. As to the suggestion (para 9) to erect a Saw Mill at Colaba ~~&~~ the Govt observe that in his report of 30 April 1860 Capt Morgan suggested that the Steam Saw Mill erected at the Ellington Barracks should be removed to Colaba but the Govt ~~do~~ not agree in this proposition. ~~Saw Mills without Government~~ probable expence of erecting it ~~working~~ & they apprehend that the requirements of the Public Docks on the Island may be spread ~~wants to keep a mill profitably~~ ~~employed.~~

Vide page 109 Colonel Munro's Forest and Gardens of South India.

10. ~~Vessels~~ Cargo sailing off ~~in~~ the sales of wood in the Forest. The decrease amounted to Rupees 23,182 or 9 ½ per Cent. The causes assigned are not entirely

Annamalais

Sales in 1859/60 – 67,260
do in 1860/61 – 44,078
Decrease 23,182

The Govt expect better results in 1861/62.

Para 10 of Captain Speedy's report (dated 28) in which he explains the state of the roads leading from the Forest will be referred to the Public Works Department.

Para 11 shows the receipts the Native Conservators immediate attention. In that para Capt Brine alludes very highly of the portion of the Forest on the Anaimalay Hills, and states that it is exceedingly rich in Teak, Rosewood and other useful timber but that it has never been worked. Many

of these Teak trees are stated to be 18 feet in girth, at a height of 4 feet from the ground. Such valuable resources should not be lost. Captain Waller will procure and submit an early report on the expediency of working this portion of the forest.

11 The proposal Mudamallai Forest to remove the leave of the Mudamallay Forests should be separately submitted with further information.

12 The proposal Madura in para 14 (Clause 2) to leave the Collection of the Forest products to the Conservancy Department instead of vesting them with the Board

[illegible]

Govt. Gardens & Plantations

17 The Government are gratified to learn that these Gardens have been considerably improved. Mr. Weir's suggestion to leave two Native apprentices and one European or Eurasian apprentice, and the altered rates of salary which involve no additional expense are sanctioned.

18 There is no room for the Herbarium at the Museum and the Superintendent cannot look after it, it must for the present remain attached to the Conservancy Office.

Herbarium

The

19 The financial results of the year are not explained in the Report but are shown in a table attached to it. The actual profit of the year was £83,732 against £393,891 in the previous year. The decrease appears to be partly owing to the value of the Government timber sold in 1858/59 but included in the accounts of 1859/60. The Board of Revenue will however be requested to submit without delay their Report on the accounts for 1860/61 and to point out and of the means adopted to

Financial Results

Receipts —— £352,649
Disbursements " £165,717
Gain £83,732

Vide para 9 of the order of Govt. dated 30 April 1862 No. 758.

of Revenue for their opinion. The Sandal-wood jungles on the Pulicat Hills should be carefully preserved and those trees which are large enough should be felled and sold.

South Canara

15 In this District as well as in North Canara jealousy between the Revenue and Forest Department is complained of. The Government cannot deal with vague and general accusations of this nature. The Assistant Conservators should bring to the notice of the Collector any instances

instances which occur
of want of willing
Co-operation on the
part of the Revenue
Officers of the District.

14 The observa- Coudeapark
tions in para 13 (clause
2) regarding the ad-
vantage [illegible]
of wooden sleepers
over cross pot sleepers
will be communica-
ted to the Railway
Department. The
proposal in the same
para (clause 3) to
introduce planting
in the jungles on
embankments and
cuttings should be
separately considered.

15 Any well conse- Firewood
-quented suggestions
which Captain Swanston
may

may offer in regard
to the preservation of
firewood jungles
will receive attention.

The Government
are not prepared
to grow fuel for the
public. They consi-
-der that there had better
be left to private en-
-terprise while the efforts
of Govt. are restricted
to preserving and mak-
-ing the most of the
existing supply.

The subject has al-
-ready received attention
as [illegible] by the order
Page 156 Cheshire Forests of Govt dated 4 June
& Gardens of South Kanara 1859 No 764 and the
Board of Revenue have
been requested to adopt
measures to induce
private parties to invest
Capital

Capital in plantations
for perceived. The
Local Rules afford
very liberal encouragement and if the people
do not plant it must
be because other modes
of employing Capital
are more remunerative.
The Board will be
requested to instruct
the Collectors to give every
publicity to the rules
under which land
may be taken up for
planting purposes.
16 The re-introduction
to grow Inga dulcis in
the parks of the Race
- ways throughout the
Island under the Trinity
Power and the whole
to commence according to
the Mauritius Report.
The

to refresh the memory
in every.
20. The Government have
with pleasure observed that
the Officers of the
Department have pre-
pared and circulated
with, and enforced obedience
21. The Government
observe that the Report
under consideration
bears date 24 Sep-
tember 1861 and by reason
their office and that
of Colonel nearly a year
after the period to
which it relates. The
Government recollect
that they
do not
recollect having received
it
any
but they
it ought to have been
before Government
3 months before the
date

date it bears - such
long thereof delay as
has occurred in the
case, pending the reports
practically removed
useless -

22. Captain Price -
I am still to take care
that the report for
1861/62 due on the
30th inst. is sub-
mitted by the 30th June
at the latest. The Ch.
will also restrict
himself to a duties
of the description of
the year reported on
and to furnish a
sketch - Any press
reports not the place
where such profes-
sions as the subject
merit of a case made
under the attention of

of case as the Board
shall be brought forward.
Such questions should
be separately sub-
-mitted for orders -

J. D. S.

Copies
Report 1861/62 Copies 28
Plan - proceeds with 10 Copies of the Report 5
Abstract Ret. No. 13 - do - 5
Statistical Report for do 3 do - 5
3 - Cost Payments

Revenue 1862 Dept.
Rec.s for Cyp. for April

P. 894.

Rec.s of the Madras Govt
P. 25th April 1862

Fin. Cons. of Proceedings of 29 Dec. 1862
No 27/63. Copy and Extract forwarded

Rec.s of the Bd of Rev. & Mil. Affairs
C No 239

Proceedings of the Bd of Revenue
dated 18th Augt 1862 Nos 1965 & 1966

Forwarding Office Copy and Extract of Minute of
Consn dated 11th Augt 1862

Reviewing the Report
submitted by the Conservator
of Forests for 1860-61.

From Govt of India dated 30 Oct
1862 C No 2680.

P. 248 & 349.

REPORT

OF THE

CONSERVATOR OF FORESTS,

FOR THE

OFFICIAL YEAR

1860-61.

Madras:

PRINTED AND PUBLISHED BY H. SMITH, AT THE FORT SAINT GEORGE GAZETTE PRESS.

1861.

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A survey of the Nellambúr plantations has been recommended; at present it is only by the number of trees planted, we arrive at an approximate area.

5. Neilgherry Sholas.—An Assistant Conservator with two Overseers and seven Peons have been granted for the preservation of these Sholás, and for the due supply of firewood and charcoal to the inhabitants. Wood is supplied at the Sholà side at 12 Annas the load of 750 lbs., and charcoal at 10 Annas the bag in the Cantonment. A large sholá for the supply of Ootacamund was sold to the highest bidder at auction under certain conditions, and the system appears to have worked well, at least no complaints of dearness or scarcity of wood have reached me. People have only to hire a cart, send it to the shola and obtain their wood, the cost per ton rarely exceeding Rupees 4-8-0, a moderate price I consider. Coonoor and Wellington Barracks are supplied from a shola in their vicinity under the same conditions. The gaps in the sholas are planted with the fast growing *Australian Acacias, Stricta and Molissima*, which make excellent firewood, splitting easily, and burning even when green. As there are no large forests near Ootacamund, I have suggested that the Devi Forest, distant some eight miles, should be worked; if a good road were made to this forest, Ootacamund might be supplied from it for years to come, and if the trees are judiciously thinned out, the forest will become a very valuable site for a Cinchona plantation. The soil is very superior, the aspect is good, abundant moisture in the ravines, and the elevation from 6 to 7,500 feet. I am now proposing that a road of an easy gradient not steeper than 1 in 18 be made by Burgher labor under the Assistant Conservator, this road will open a new part of the Hills and at the same time render firewood abundant.

Major Babington's Report, Appendix F.

6. Wellington firewood plantations.—These plantations have not hitherto made the progress expected of them, the causes are plain, the greater part of the plantations face the south, and from being exposed to the monsoon the surface soil has been completely washed away. Had the Northern face of the valley been first planted, I have no doubt from the excellence of the soil on that face, that the progress of the plants would have been every thing we could have desired. The system of pitting is not good for rapid growth. I have recommended the trench system and a larger planting of the *Acacia Molissima* which grows quicker than the *Stricta* and multiplies itself by suckers to an unlimited extent.

7. Cinchona Plantations.—The Cinchona plants in the gardens embracing at least five very valuable varieties are progressing favorably; in November next the ground at the Neddivuttum site will be put in order, and by July there is every probability of some 50,000 plants of the valuable red bark (*C. Succirubra*) being ready for planting out. There will also be plants of other varieties, more suitable to a greater elevation, such as the Dodabetta site 7,400 feet, and the Avalanche site. Further supplies of seeds and plants from Kew are also shortly expected, and there is every probability of our soon being in a position to stock at least a thousand acres. We are also promised seeds and plants from Java, but with the exception of the *C. Calisaya*, they have nothing of any value.

8. Tea Plantations.—I have inspected the tea plantations of Messrs. Mann and Rae, the former has not been much extended, but the Tea produced from it, though manipulated by a person who has not been properly taught, is of a superior description and promises well for Neilgherry Tea. The latter plantation contains only young plants, but covers an extent already of some thirty acres, and is daily increasing; when these trees bear seed some three years hence, a nucleus for the supply of future plantations with seed to almost an unlimited extent will be created, and there is but little doubt, but that in a very few years hence, the Neilgherries will be in a position to export Tea largely. The present system of grass-puttah holding by the Burghers must first be placed on a proper basis, before parties will come forward to colonise these hills. The Burgher holdings should be as clearly defined as those of any other individual, unless this is done, endless vexatious disputes must arise, and consequent discouragement to colonisation. The selling of sholas has been a subject of deep consideration, if Tea and Cinchona plantations are to be formed by speculators, they must have some Forest land, say, ten per cent. of the entire grant; for the woodlands they should pay a far higher rate than for grass-land, the reason being that not only must the expense of planting fresh land be undertaken by Government to supply the loss of Forests

Vide Report, Appendix K.

destroyed, but the shola land being in heart is ten times more valuable than the grass-land, which takes from two to three years of digging and manuring to get it fairly in heart. An upset price of 2½ Rupees per acre for the grass land, and 10 Rupees for the sholá-land would be a fair approximation. The land to be sold outright to the highest bidder. The surplus amount obtained by the sale of the wood-land, to be bonà fide expended in the creation of new woodlands. The present rate of 10 Rupees per acre for grass-land seems to be too high for the fee simple.

9. Saw-mill in Ootacamund.—A saw-mill is much required, the Native sawyers charge very high and spoil the wood; if a saw-mill driven by the surplus water from the lake were established, it would be a boon to the public and a saving to Government. At present plank sawing adds fifty per cent. to the cost of the wood. The amount of sawn timber required by the public would probably amount to 10,000 square feet per month.

10. Anamallais.—The sales of wood in this Forest have fallen off more than thirty per cent. in the last year, the reason alleged is want of axemen. But Rupees 44,078-2-5 were realized in 1860-61, against Rupees 67,259-10-5 in 1859-60. There was also a change of Officers during the working season, which may probably have caused some difficulties. There are many improvements required in this Forest, such as a new timber slip; the present make-shift of a slip being in most places simply the rocky bed of a water course, and the labor and expense entailed in slipping the dockyard planks by means of elephants is very great. A proper slip is far more required than a new ghât; a slip made of logs of trees would cost not more than 3,000 Rupees, whereas a ghât of 1 in 20 would cost 15,000 Rupees, and the cost of carriage would exceed that of slipping by fifty per cent. A ghât was traced and estimated for, but in my opinion it is not required. The present cost of slipping the planks by elephants is some 1,500 Rupees, if men were employed on a proper slip the cost would be under 500 Rupees. I have directed an estimate for a slip to be prepared, and hope to submit it shortly. The proposition to establish a saw-mill, cannot, I fear, be entertained, as the present establishment though very strong *apparently* for the work turned out, is barely able to get through the ordinary demands. A saw-mill would require a skilled Establishment, and the chances are that, fever would soon incapacitate them from labor. As a rule in these very feverish jungles, it does not pay to attempt any thing beyond what can be accomplished by the rudest labor. The Teak plantation here has not been very successful, a small clearing of two acres was planted, but most of the plants died; it is a question, if it is worth while to plant here, for though we have excellent soil, a fine situation, and Teak growing remarkably well, we labor under the following disadvantages, viz., a very feverish locality, scarcity of labor and 40 miles of land carriage. If it could be shown that the Anamallai timber fetched by ten per cent, only a higher price in the market than Nellambúr Teak, then it would pay to plant on the Anamallais; but at present prices are much the same, and as we have thousands of acres at Nellambúr excellently adapted for Teak planting with water carriage, it does not seem expedient at present to extend the Teak plantations on the Anamallais. Further, the only market where we should not be undersold, would be the Coimbatore market, and the amount taken would be insignificant. To plant 100 acres and keep them clean for one year requires the labor of some 12,000 coolies or 33 daily laborers. We have great difficulty in obtaining sufficient labor to repair our roads, how then could we obtain labor for large plantations.

Captain Brine's Report, Appendix A.

11. Mudumallai.—The returns from this Forest during the past year appear small, but only half a year is represented, the forest having been worked for the Wellington Barracks for the first six months of the year, and only made over in November last to the Conservancy Department. This Forest is rented from the Theropád of Nellambúr and has been worked for the Wellington Barracks, supplying them with more than 1,50,000 cubic feet of Teak at the market rates prevailing in Ootacamund and Mysore. On the adjustment of the Barrack Accounts with the Forest, it was found that the Forest possessed in prepared timber, plant, and money due by the Barracks for timber supplied, a sum amounting to Rupees 52,012-8-0. Thus by the working of this Forest, the Barracks have gained largely, as formerly they obtained their timber from the Anamallais at a cost of 4 Rupees the cubic foot, and with great difficulty. If we allow that the

50,000 × 4 = 20,0000
50,000 × 1-7 = 71,875
saving Rs. 1,28,125.

Barracks must have obtained at least 50,000 cubic feet of this timber from the Anamallais at a cost of Rupees 4 the cubic foot (the Ootacamund market then supplying no timber) instead of Rupees 1-7-0 the rate charged by Mudumallai Forest, then have the Barracks gained by Mudumallai nearly a Lack and a half of Rupees, besides a very great saving effected in the time occupied, as a glance at the returns would soon show. Their timber supplies before Mudumallai was worked, averaging some 10,000 cubic feet annually; afterwards they rose to 40,000 cubic feet, or four times as much.

Captain Gib's Report, Appendix C.

There are still some two years of the lease to run, and every effort is made to get out as much timber as possible and store it at Sawyer's village, as unless we have this supply of timber for our Public buildings, Sigúr Forest being exhausted, we must go either to Mysore or the Anamallais for our timber; from the former, we can obtain no long timber, and from the latter, it will cost us 4 Rupees a cubic foot. The Jail, New Church, Lawrence Asylum, and Barracks, will require a considerable amount of timber, and that our Depot will afford a full supply of well seasoned long and short wood, is satisfactory.

12. Sigúr.—The sales of Sandalwood from this jungle have been very satisfactory. Ripe wood (which otherwise might have decayed) has been cut in every available spot, young trees have been carefully tended, and the system of conservancy extended far down the Moyar valley.

The Teak has not been felled, but young trees have been looked after, and preparations made for forming a small experimental plantation.

Jungle woods such as Vengé, Kurramurdah, &c., find but few buyers, the expense of sawing in Ootacamund, acting as a bar to all purchasers. Good and economical sawing would tend much to a large consumption of the superior jungle woods. On the expiration of the Mudumallai lease, we shall only have Sigúr to look to for Teak, and it becomes a question whether we should not take a perpetual lease of Mudumallai, if obtainable on reasonable terms.

13. Wynaad.—Very little has been done in these Forests as yet, beyond preventing the passing of timber into Mysore, general illegal felling and clearing the Forests for cultivation called Coomree. Until the survey has determined boundaries, it would not be advisable to commence operations of any kind.

14. Madura.—The conservancy of these Forests has but just commenced, and there is no doubt room for considerable improvement, a small sum for the working of these Forests as an experiment has been sanctioned, and it remains to be seen with what success. It is to be hoped that the felling of the timber by the Forest Department and periodical auctions will be found preferable to the License system, which at the best, always occasions trouble and is of doubtful advantage; parties taking out Licenses always felling the smaller trees and leaving the ripe ones as they cost more in the first instance though they pay best in the long run. I myself am a decided advocate for working all valuable jungles, and it remains to be seen, if Madura is to be classed under this head, or like Salem to be left to the License system. Mr. Sperchneider's report next year will, I trust, decide the question.

Mr. Sperchneider's Report, Appendix I.

The renting of the Forest products has always been a vexed question, as parties under pretence of collecting them, steal Sandalwood, damage young trees, and often carry off logs. I am of opinion that the Forest products were better managed by the Conservancy Department where the products are collected in valuable jungles, barks, dyes, seeds, &c., collected from scrub jungles might fairly be open to all.

An increased Establishment for the Madura Forests has been applied for, and, I trust, that next year we shall be in a condition to work them systematically.

Report, Appendix, G.

15. North Canara.—This very important Forest has not fallen off, though Mr. Muller complains greatly of his present Establishment. An increased Establishment has been applied for, and it is to be hoped that with increased means conservancy will be more strictly enforced. I do not agree with Mr. Muller in the idea that the Establishment should be under the Collector, who must already have sufficient occupation, without being troubled with the executive details of the conservancy system, and which more properly belong to a separate Department. It appears that Dr. Cleghorn thrice visited the Forests of North Canara, but reframed from recommending a much increased Establishment. Looking at the rtions and

of the operations and the small pay of the present Establishment, I have deemed it absolutely necessary to recommend an increase. I believe Dr. Cleghorn had no other objections against an increase, but "Financial pressure."

The clearing of the Kalanuddy has been again delayed in consequence of the Department Public Works, being unable to furnish an Overseer for the work, it is very important that the rocks in this river should be blasted. A sum of Rupees 6,000 has been granted, but as yet none has been expended. I trust we shall be able to obtain a skilled Overseer from the Department Public Works before the present dry season commences to enable us to make some progress this year, or we shall lose a very large return. The sum of Rupees 6,000 is only for partial clearings of the Kalanuddy river, to clear the river effectually, Mr. Müller roughly calculates the cost at a lac of Rupees, but even this large sum would be more than repaid by the immense quantity of valuable jungle woods which could be cheaply brought down. It is of the most vital importance to our Forests that we should avail ourselves to the utmost of water carriage when procurable, and to neglect even the partial clearing of the Kalanuddy will be to throw away money, for those jungle trees now in their prime, the value of which might be at once realised, must decay in a few years, and thus be lost.

16. South Canara.—The operations in these Forests for the last year are satisfactory; the Revenue is steadily increasing, whilst at the same time the pruning and careful preservation of numerous Teak and Blackwood saplings is carried on, the beneficial effects of which will not appear for some years to come.

Jealousy between the Revenue and Forest Departments is complained of, and time alone will convince the Native Revenue authorities that they must support the Department instead of thwarting it on all occasions. Collectors, however, anxious to support the Forest Department, are constantly ignored by their own Native subordinates. An additional Establishment has been proposed for these jungles, and a grant of Rupees 3,000 for working them. As the system becomes further developed, it will be necessary to take over the eventual working of them, instead of carrying on the stump fee system. It is also desirable that Teak plantations should be formed on the banks of the river in the Súliah jungles, and it will be necessary that a separate grant be made next year for the above object.

17. Cuddapah.—These jungles have been but lately taken over, and a small Establishment sanctioned. They are worked much on the same principle as the Salem Forests, viz., the License system, and it does not appear to me that we shall ever be able to introduce any other system. The jungles are thin, the valuable trees far apart and roads but few. The principal wood of commerce is the Red Sanders or *Pterocarpus santalinus*; a heavy seignorage is readily paid by merchants on this wood.

The conservation of these jungles was commenced only just in time, a few months later, an enormous havock would have been occasioned. When we consider that the Railway runs through their entire extent from Nagguri to Cuddapah, exactly the same effects as followed the Establishment of the Railway through the Salem District would have taken place in Cuddapah. The substitution of iron pot sleepers for wooden ones on the Northern parts of the Line will tend much to relieve the Cuddapah jungles, though it is a question, if the very salt-earth in the Cuddapah and Bellary Districts will not soon corrode the iron, and cause a return to wooden sleepers. The packing of the wooden sleepers in sand and gravel, besides exposing their surfaces to the air, has tended much to preserve them; wooden sleepers tightly packed above and around with the salt-earth that prevails to a great extent in the Salem and other Districts, were soon destroyed the best Vengé sleepers not excepting.

The Railway passing through the principal jungles in Cuddapah, occasions a great traffic in wood, and the demands in consequence are already becoming very great. No planting of any kind has as yet been undertaken in the Salem and Cuddapah jungles, but if the demand for timber goes on at the present rate, it will become absolutely necessary to plant. I would not recommend an elaborate system, such as is pursued in Nellambúr, but simply the ploughing up of a few acres in an eligible spot, sowing the seed of Forest trees broad-cast, and then thinning out. Transplanting in such dry and hot regions, unless very considerable and expensive precautions were adopted, would most likely fail. There are many favorable spots for the above experiment in the Bálpilly jungles of Cuddapah and the Cotaputty jungles of Salem, also in the Denkincottah jungles where the cedar tree flourishes.

18. AVENUES.—I am of opinion that the Avenues should be placed under Collectors, and heads of villages made responsible for the proper care of the trees; at present the Engineer Department has the charge of Avenues; but I do not find that Overseers and others take much interest in the preservation of the trees, and villagers may cut the trees to pieces to feed their cattle, without the headman attempting to prevent them or inform against them. If the Engineer Department simply planted the trees and then handed them over to the Collector, the system would no doubt work better, the heads of villages being held strictly responsible for the preservation of the trees from wanton destruction.

19. FIREWOOD.—To supply the increasing demands of the Railways, Iron smelting and Indigo concerns for firewood, now engages my serious attention. A tax of 12 Annas per ton or 6 Annas per bandy load has been levied in some Districts; but large concerns, such as the Tirunamallai iron works, and Mr. Fischer's works in the Ahtúr Talaq of Salem, object to pay this small tax, and representations have been made for a remittance of the above tax. I am of opinion that all great works should compound for their firewood, the Railway, the Iron smelters, the Sugar and Indigo factories, &c., compounding for the tax would save a vast amount of vexatious watching and levying of small sums.

It will soon be necessary to plant many acres of ground with quick growing Acacias to supply the enormous demand for firewood, which is daily on the increase. Some idea of the consumption of firewood may be formed, when I mention, that at Tirunamallai a circle of some 12 miles in diameter, which abounded in small wood, is now almost entirely denuded of every tree, and this in the course of some seven years. In the Salem District, the consumption of firewood annually amounts to many thousands of tons; in Cuddapah the export is becoming considerable; in South Arcot, especially at Tirunamallai, the expenditure is enormous. It is clear that some remedy must be devised. I recommended to the Railway Agent the growing of the *Inga dulcis* along the banks of loose earth on each side of the Railway. If this was perseveredin throughout the Line, in a few years they would become entirely independent of external supplies. Instead of planting this useful tree for firewood, prickly pear has been planted, which is quite useless, and is further a public nuisance. The Aloe has also been largely used; it makes a good fence, but should give way to a fuel producing tree.

20. FENCES.—Our Nellambúr Teak saplings were, I believe, found useful for a rapid fencing of the Line; this year we shall have a large number to dispose of. I may mention it has been found, that if the upright posts for fences are buried in gravel so as to secure efficient drainage, they last twice as long as when simply buried in earth. The same effect has been found to follow when sleepers are so treated.

21. PLANTATIONS FOR FIREWOOD ON THE NEILGHERRIES.—There are certain situations where plantations for firewood on the Neilgherries might be found to answer; land intervening between sholas where probably trees once grew and on which there is only a dense brushwood growing on rich soil, if the brushwood is cut down and burnt in the dry weather, and the seed of *Acacia dealbata* and *mollissima* scattered broad-cast, firewood plantations might be raised at a cost of about 20 Rupees per acre, but our space is limited and we cannot command many acres of the above description. There is a good extent at the Governor's shola now being worked. On the first rains falling, it would be necessary to thin out the plants, and for the first year at least to keep down the weeds, &c. Any other mode of raising firewood plantations especially in grass-land would cost from 70 to 100 Rupees per acre. With respect to the *A. mollissima* or yellow flowering Australian Acacia for firewood plantations, it is a curious fact, that hares rarely touch it, whereas they will destroy the *A. dealbata* by hundreds; the reason I conceive is that one is much more bitter than the other, the roots of *A. mollissima* when dug up, emit a powerful and very unpleasant odour. The bark of the *A. mollissima* is useful for tanning, and from the wood I have obtained tar.

22. PEAT.—The use of Peat does not seem to be on the increase, the cause is not clear to me, as Peat when mixed with firewood or even alone forms an excellent fire, indeed is better could not be desired. Natives have an objection to it, as in their opinion the fire is not so cheerful as the blaze from wood, and consequently, they imagine the heat given out is less hot; in this, they are much mistaken. In trying some Peat charcoal at Wellington a few years ago, it was found that the radiating heat from Peat charcoal was fifty per cent. greater than that of wood charcoal.

23. CONSERVANCY REMARKS.—In reviewing the Forest Conservancy results of the year, it is of importance to bear in mind that though the revenue has not increased, destruction of Forests over a very large area of country has been arrested; complete Establishments for some Districts organized with rules clear and distinct. Planting in various localities has been carried on, and preparations made for increasing this important branch of conservancy. The Cinchona experiment is promising. Improvements are contemplated in the working of various Forests as yet not systematically worked or conserved, and the Accounts are audited monthly instead of annually.

Sickness has been rife amongst the Officers of the Department; Dr. Cleghorn and Lieutenant Beddome are on sick leave to England; Captain Brine on the Neilgherries, Mr. Morison at Madras, and Mr. Reid who relieved me from the charge of Mudumallai has died. Thus, out of an Establishment of eight Officers, one has died and four are absent sick. From this it will be seen that a Forest appointment is no sinecure, the utmost precautions at times being inadequate to the warding off of fever.*

24. ASSISTANTS.—I am well satisfied with the exertions of my Assistants for the past year, many of them have had very laborious duties to perform, and through their exertions, the Conservancy system though still in its infancy, is beginning to assume a definite shape; but it will take years to properly develope the system, so that it may become a very important feature in increasing the resources of the country.

25. GOVERNMENT GARDENS, OOTACAMUND.—These gardens during the past year have been considerably improved, the grassing of the lower part gives a lawn-like appearance which was not possessed before. The glass houses have been of the greatest use in acclimatising the Cinchona plants received by Mr. Cross, and in the raising of seedling plants. Mr. Melvor's success in raising seedlings and propagating cuttings from the plants brought by Mr. Cross has been very great. The trees are in the highest health, and their rate of growth is exceedingly fast; the Dutch plants average about six feet a year, and I see no reason why our plants should not equal theirs. Mr. Melvor is quite right when he says, shelter not shade is what the plants require. What was observed by Mr. Cross of the habit of the *C. succirubra* in dense shade on the Andes, has been observed by me in the habit of the *Eucalyptus robusta* when planted in dense shade in Ootacamund. I have also observed that trees grow best in partial clearings where they obtain light, air and shelter. Eight feet apart appears a fair distance for the plants, the Dutch in Java make it twenty-five, consequently, the area to be supervised is enormously increased. I have some doubts about the yield of bark from the pruning system. I think it will be found better to cut down the trees and plant new ones, however, this is a matter for experiment and Mr. Melvor will soon be in a position to give the results of both processes. Further, the *C. succirubra* is so easily propagated from cuttings, that Mr. Cross informed me that he simply went through the Forest, cutting off branches, trimming them, and sticking them in the ground, when they struck readily.

(Vide Mr. Melvor's Report, Appendix L.)

The receipts of the Gardens for the past year appear to be on the increase, which is satisfactory. Mr. Melvor's suggestion that the Apprentices should be chosen from the Gardeners, appears judicious, and, I would recommend its adoption. Rupees 15 is not sufficient to ensure a European Apprentice of fair abilities, if the sum were increased to 20 Rupees, it is possible that promising lads would come forward, more especially as there will be openings for advancement in the Government Cinchona plantations.

26. OFFICE.—Native Surgeon P. Appavoo has rendered satifaction in carrying on the complex duties connected with the Office, the labors of which have now much increased, the Bills requiring to be submitted monthly. My head clerk, Mr. Spring, has exhibited a considerable knowledge of the general duties appertaining to his Department, and is well qualified for promotion.

27. HERBARIUM.—The removal of the Herbarium to the Museum, where proper accommodation can be provided for it, and where every body will have access to it, having already been discussed, I have only to remark that the nature of the Conservator's duties taking him so much away from Madras, he can have neither time or opportunity to supervise the Herbarium; all he can do, by the aid of himself and Assistants, is to add to it.

*Mr. Blenkinsop of Salem is dead.

28. Useful Products which may be cultivated at different elevations on the Neilgherries.—On the upper plateau of the Neilgherries—Tea may be cultivated at an elevation from 5,500 to 7,500 feet; Coffee from 3,000 to 5,000 feet; Cinchona, according to varieties from 5,000 to 8,000 feet; Neilgherry nettle which produces some of the highest priced Hemp in the world from 6,000 to 7,000 feet in very rich soil; Cotton, viz., Sea Island and New Orleans from 3 to 5,500 feet; Kulhutty has produced some very superior staple grown from Sea Island Cotton seed; Potatoes are produced from 4 to 7,500 feet, those grown much below 4,000 are wanting in flavor; Kulhutty produces the best Potatoes on the Hills, elevation 6,500 feet. The proportion of Starch yielded by the Kulhutty potatoe exceeds the average given by "Loudon" as the yield of the English potatoe. *Eucalyptus robusta* one of the best timber trees of Australia grows well between the elevation of 5,500 and 7,500 feet; indeed, all the Australian trees of every kind flourish here.

Financial Results.—The financial results exhibit a profit of more than a lac and a half of Rupees and with a stock of timber worth nearly four lacs of Rupees.

North Canara, our most valuable Forest, is steadily improving.

The Anamallais will this year I trust show a more favorable balance.

Mudumallai has a large stock of timber on hand available for any public works that may be commenced.

Sigúr has proved profitable.

Madura will this year show more favorable results.

The *South Canara* returns though satisfactory may be expected to increase.

Salem and *Cuddapah* will this year show an improved balance sheet.

The *Neilgherries* nearly pay the expenses of conservancy, and next year if *Wynad* is worked, the returns will more than cover the outlay.

Nellambúr is improving, the demand for poles will no doubt cover the expense of planting in future.

I have the honor to be,

Sir,

Your most obedient servent,

(Signed) H. R. MORGAN Captain,

Acting Conservator of Forests.

Financial Results of Conservancy, for 1860-61.

Names of Forests.	Receipts by the sale of Timber, &c.				Disbursements including the cost of Establishment, Contingencies, &c.				Balance in favor of Government.				Excess of Expenditure over Receipts.				Value of Timber on hand.			
	Rs.	A.	P.		Rs.	A.	P.		Rs.	A.	P.		Rs.	A.	P.		Rs.	A.	P.	
Anamallai	44,078	2	5		29,911	15	11		14,166	2	6		...	...	...		71,494	5	7	
North Canara	2,53,149	2	8		78,394	7	1		1,74,754	11	7		...	...	...		1,54,006	0	0	
South Canara	9,951	3	0		1,682	4	8		8,268	14	4		...	...	...		.....	...	...	
Mudúmallai.....	2,500	0	6		16,345	9	8		.....	...	...		13,845	9	2		99,492	4	0	
Sigúr	11,657	2	8		5,201	1	10		6,456	0	10		...	...	...		15,509	8	11	
Neilgherries	4,422	9	0		4,788	5	3		.....	...	...		365	12	3		.....	...	...	
Salem	15,376	0	0		4,363	4	1		11,012	11	11		...	...	...		.....	...	...	
Madura	2,568	5	1		1,517	5	4		1,050	15	9		...	...	...		.....	...	...	
Cuddapah	4,131	0	8		1,257	9	6		2,873	7	2		...	...	...		.....	...	...	
Wynád	...	...	...		2,555	3	10		.....	...	...		2,555	3	10		.....	...	...	
Nellambúr	4,615	6	8		2,907	4	7		1,708	2	1		...	...	...		.....	...	...	
Total Rupees...	3,52,149	0	8		1,48,924	7	9		2,20,291	2	2		16,766	9	3		3,40,502	2	6	

Deduct General Charges.			
Pay of the Conservator of Forests, Establishment, Contingent charges, &c.....	19,792	14	2
Excess of Expenditure over Receipts in Mudúmallai Forests	13,845	9	2
Do. Neilgherry Sholas ..	365	12	3
Do. Wynád	2,555	3	10
		36,559	7 5
Actual Profit Rupees...		1,83,731	10 9

APPENDIX A.

Coonoor, *3rd June* 1861.

No. 14.

From Captain J. J. BRINE, *Assistant Conservator of Forests.*

To Captain H. R. MORGAN, *Officiating Conservator of Forests.*

Sir,

1. I have the honor to forward the annual Accounts of the Anamallai Forest for the year 1860-61, countersigned by the Collector of Coimbatore, in accordance with Extract Minutes Consultation, dated 12th November 1857, No. 1,153, paragraph 9.

2. The amount realised by the sale of Timber to the Bombay Dockyard during the past year is Rupees 23,698-1-3. The remainder of the assets is derived from the sales of Rosewood to the Gun Carriage Manufactory at Madras, proceeds of auction sales, Timber supplied to the Railway Company, and to private individuals, and seignorage of trees felled. These, in the aggregate amount to Rupees 20,380-1-2, making a total of receipts of Rupees 44,078-2-5, for the past official year. Against which on the debit side, on account of expenditure, is the sum of Rupees 20,069-3-11, exclusive of the pay of the Establishment, viz. Rupees 9,842-12-0, making a total debit of Rupees 29,911-15-11. Thus the profits for the past year amount to Rupees 14,166-2-6 against those of 1858-59, which were Rupees 45,173-8-6. To account for this falling off, I beg to remark that my predecessor, Lieutenant Beddome, experienced great difficulty in obtaining the requisite number of axemen in the previous season, hence the amount of timber cut was so small. You will also be pleased to observe that while in consequence of this, little work of remunerative description was being done, yet comparatively a large expenditure was being incurred. Not that it was unnecessarily so, but merely with reference to the year's profit returns. One item for Commissariat Elephants, amounts to Rupees 2,437-8-6. These animals do not work nearly so well as the Forest Elephants. The former drag the logs with their teeth, the latter by the aid of a collar round the neck, and are constantly in the sick list with sores and galls. The falling off in the profit returns for the past year is certainly large, but I have every confidence that a steady improvement will be the rule for the future. 1,345 planks having been cut this year, while it is estimated that 3,000 will be cut in the ensuing season.

3. I took charge of the Anamallai Forest from Lieutenant Beddome in the beginning of last September, up to which period about 350 planks out of the 1,500 estimated for, had been cut. I had at first some little difficulty in procuring axemen in sufficient numbers; but towards the close of the working season they came forward more readily, and I was thus enabled to keep the work going till the end of February, and so make up for lost time. The services of the eight Commissariat Elephants I was enabled to dispense with in the beginning of February. They had been chiefly employed in dragging out of the jungle such logs and planks as remained. These have now all been placed in Depot, and I do not think there is any more cut-timber now outlying in the forest.

4. One thousand three hundred and forty five planks for the Bombay Dockyard have been cut in the past season, and the whole of these have been brought to the foot of the slip, a distance of 15 miles from where they were cut, and are now being rapidly carted away to Mungarah in readiness for being floated down the river to Ponany. The value of the planks, including logs, heads, and butts, is Rupees 86,470-8-0.*

* I fear this amount will not be realised, it is far too high a valuation. H. M.

5. From the readiness with which axemen offered themselves for work latterly, and their assurance that they would all come to work in the ensuing season, I was induced to estimate for the cutting of 3,000† planks. A respectable native has also entered into a contract with me to deliver 500

† Many axemen have come forward this year. H. M.

planks at the foot of the slip annually; and has deposited, as present security, Government Promissory notes to the value of Rupees 2,000. The planks are to be delivered on the above spot at the rate of one Rupee per cubic foot.‡

‡ This arrangement has not been approved of by me, the rate is too high. H. M.

6. I consider that a saw-mill on the American principle, worked by water power; would be of great advantage, by the saving it would effect. The loss of good timber by the present rough mode of literally digging out the planks with an axe is immense. One saw-mill would not of course entirely supersede the use of the axe; but it would undoubtedly be of great service in converting into planks all the fine logs of timber now lying in Depôt on the road side. The best locality for erecting this mill would be on the banks of the stream, where this road crosses it about ¾ of a mile from Tunacadavú, that being the most central position with reference to the timber to be sawn, as well as the most convenient for superintendence. I estimated 600 Rupees for this mill, but that was only for the mere cost of putting it up, and adapting the stream to it, but does not include of course the cost of machinery.§

§ The establishment through fever cannot get through their ordinary work, a saw-mill would not pay. H. M.

7. The small experimental Teak plantation is now thriving pretty well, though at first owing to the failure of both monsoons, I was afraid that all the plants would perish for want of water, and some of them did.

8. Owing to proper precautions having been taken by clearing away the brushwood, &c., the periodical fires have passed through the Forest without doing any damage.

9. I have experienced much the same difficulty with reference to Mulser labor, as described by my predecessors. Some, eight or ten of them, were tolerably regular in their attendance as sawyers. They are not very good workmen at present, but are improving.

10. The present cart road has been extended between two and three miles further westward to enable us to cart away the timber when felled; and the whole existing road and slip has been repaired. I have also brought to the notice of the District Engineers of Coimbatore and Malabar the state of the two principal roads leading from the Forest. That from the foot of the slip to Mungarah, the floating station, and by which the planks are conveyed to the river, is much in want of repair. The other road which commences at the slip, and proceeds thence through the town of Anamallai to Pulachy, is in very good repair. There are, however, four nullahs in the eight miles between the slip and Anamallai, which require to be bridged. On account of the abruptness of their banks it is with difficulty, and at considerable risk to the bullocks, that large and heavy logs of timber can be carted across them. It is by this road that all the Rosewood logs, required by the Gun Carriage Manufactory, are conveyed, as well as such other timber as may be purchased by the Railway Company and others. The District Engineer of Coimbatore has informed me that he has instructed the Officer in charge of the Range to include these bridges in his estimate. I consider it to be of the highest importance that the approaches to the Forest should be kept in good repair, as of course the extension of the sale of Timber must materially depend upon the means of transport. The distance from the foot of the slip to the Railway Terminus at Coimbatore is 40 miles, and with the exception of the four nullahs abovementioned, is in good order.

11. While residing in the Forest, I twice made excursions to the river, which is the boundary between the Cochin and Madras Forest. It lies about 7 miles south of Tunacadavú.* About a mile from the cart road is the Anagundy pass, over which the path to the river leads. That portion of the Forest lying between the top of the pass (which has an elevation of some 600 feet,) is exceedingly rich in Teak and Rosewood of the largest size; as well as other useful timber. The sholas abound in Poon† and Dammer trees. This part of the Forest does not appear to have been ever worked, owing, I imagine, to the difficulty of removing timber after it was cut. It was my intention, this season, to have more fully explored both this part of the forest and the river above alluded to, to ascertain if it was practicable to float timber down it to the Cochin river, into which it flows. Could this be done, it would, I am sure, open up the resources of the Forest in a remarkable degree. I noticed many Teak trees measuring as much as 15 feet in girth, 4 feet from the ground. The finest timber of all kinds also grew in the vicinity of the river.

* My place of residence. J. B.

† Used for ships masts and spars. H. M.

12. Although it was duly advertised in the local Gazettes, there was no annual auction sale of timber at the foot of the slip this year, as no buyers were present on the day of sale, viz.

5th December 1860. This is the most unhealthy period of the year in that locality, and I proposed in future to have the sale of timber in August or September.

13. The past season has been a more than usually unhealthy one, owing to the want of rain, and all hands have suffered from it more or less. I took up my residence in the Forest on the 9th of September last, just as the feverish period was commencing. I did not leave it, with the exception of a few days, being compelled to do so by fever, and being at that time without medical aid, till the 20th November; and I then retired to Anamallai, eight miles off, where I remained till the 6th December, when I was obliged to quit, owing to a severe attack of fever, from the effects of which I am still suffering. My medical attendant has advised me to abstain from re-visiting the Forest until my health shall have been completely re-established, and has therefore, recommended my taking six months' sick leave. I regret very much, the being compelled to adopt such a course, as I had hoped to have personally carried out the estimate for the ensuing year, as well as various other matters connected with the working of the Forest, during the period of residence in it. I trust, however, that I shall be able to give such directions to the Officer who may be appointed to act for me, as will enable him to carry out the views which my experience of the Forest and its work, has taught me to be right ones.

14. The annexed statement shows the comparative quantity and value of Timber supplied to the Bombay Government in the year 1860-61, denoting the increase or decrease in the number of planks, quantity and class delivered, and the amount realised. The rates being determined by the Collector of Malabar, from their fair market valuation.

Comparative statement of Teak timber supplied to the Bombay Government for Dockyard purposes in the year 1859-60 and 1860-61, showing the increase or decrease in the number of planks, quantity and class delivered, and the amount realised in each year.

For the year 1859-60.								For the year 1860-61.									
Number of Planks.	Class.	Quantity. Koles.	B.	Y.	Rate per 100 Koles.	Amount.		Number of Planks.	Class.	Quantity. Koles.	B.	Y.	Rate per 100 Koles.	Amount.		Increase.	Decrease.
					Rs.	Rs.	A. P.						Rs.	Rs.	A. P.	R.	
311	1st	22,301	9	6	100	22,301	12 6	254	1st	19,363	3	4	75	14,522	7 3		
226	2nd	13,069	8	6	90	11,762	11 7	123	2nd	7,405	4	2	60	4,443	3 3		
305	3rd	13,713	11	14	80	10,971	3 0	108	3rd	5,171	10	13	50	2,585	15 3		
81	4th	3,155	1	1	75	2,336	5 0	55	4th	2,031	5	14	40	812	9 6		
23	5th	750	3	2	70	525	2 11	24	5th	744	4	6	30	223	4 11		
242	Inferior	11,899	8	6	40	4,759	14 0	92	Inferior	4,442	3	3	25	1,110	9 1		
1,188	...	64,849	6	3	...	52,657	1 0	656	...	39,158	7	10	...	23,698	1 3		28,958-15-3.

(Signed) J. J. BRINE, Captain,
Assistant Conservator of Forests.

APPENDIX B.

Administration Report of the Sigúr Forest, for the Official year 1860-61.

1. Since I took charge in December 1860, the Curumbers attached to this Establishment have been employed in felling Sandalwood.

2. Six thousand rupees have been remitted to the Collector of Coimbatore, being money realised almost entirely by the sale of this wood. As the Government allowance during the past year was only 50 Rupees a month, this gives a clear profit of Rupees 5,400; besides having in store at Masniccóvil about 63 candies, valued at say Rupees 4,600, ready for sale. There being very few ripe Sandalwood trees in the vicinity of Masniccóvil of Sigúr, I sent the

Curumbers in January to a place called Talamallai, where there is a good deal of Sandalwood of fine growth, but it being an exceedingly unhealthy place, I had to withdraw them last month.

3. At Talamallai there are 1,200 billets ready to be brought to Masnicóvil, but I experience some difficulty in procuring carriage.

4. The Curumbers are to be employed for the next two months in pruning and clearing young Sandalwood trees in the Sigúr Forest, after that they return to Talamallai. As stated in my report on the Mudumallai Forest, the Teak trees in the Sigúr Forest, are nearly all felled. I have, by your desire, sent to Nellambúr for two cooly loads of Teak seeds to be sown in some eligible site.

(Signed) W. A. GIB, Captain,

Assistant Conservator in charge of Sigúr Forests.

Ootacamund, *9th May* 1861.

APPENDIX C.

Administration Report of the Mudumallai Forest for the Official year 1860-61.

1. During the first six months of the past official year, this Forest was worked for, and at the expense of, the Wellington Barracks; but it was placed under the Forest Department from the 1st November 1860. At the time of transfer there was a balance in favor of the Barracks, of Rupees 52,413-8-2. This amount must be liquidated by the supply of timber as required by the Barracks. In the past year 4,930 ¾ cubic feet of Teak have been supplied to the Wellington Barracks, and 3,832½ cubic feet of Teak have been sold in the market, realising Rupees 2,500-0-6, which have been remitted to the Collector of Coimbatore.

2. Roads.—The Forest roads are, for fair weather roads, excellent, and have been originally most judiciously traced, but become heavy in the rains, and but little carting can be performed at that season.

3. Curumbers.—The Curumbers continue to work well and steadily but always require advances.

4. Sawyers.—There are only five sets of Sawyers just now, and it is difficult to procure others even at high rates of pay, they suffer so much from fever.

5. Elephants.—One elephant died last month, there remain five; but one is very small and is to be sold as soon as a purchaser can be found. Besides our own Elephants there are four belonging to the Commissariat at present working in the Forest. I propose sending away these in about two months.

6. Buffaloes, Bullocks and Carts.—A great deal of the carting is done by our own bandies. Without them the timber fellers would be a long way in advance of the carting, for although, one would suppose self-interest would be sufficient to induce the Bandy contractors to look after their own cattle, it is not the case; they neglect them sadly, and in consequence they fall off so much in the dry season that they can hardly get through any work. I may add that the past dry season has been an unusually dry one, in fact in February last there was hardly a blade of grass to be seen, and water failed in places where it had never been known to fail before.

7. Forest.—The forest lease has now nearly two years to run, and according to the Orders of Government the timber is being stored at Musnigudi, where there is already 33,396 cubic feet. In the Forest we have 93,290 cubic feet lying about waiting to be carted to the Depôt, in all 1,25,830 cubic feet, much of which is of fine scantling, well-seasoned, and ready for immediate use. At the Ootacamund Timber Yard there are 5,522¾ cubic feet of Teak. The object being to get as much wood out of the Forest as possible before the expiration of the lease, it is worked during the unhealthy as well as the healthy seasons, unlike the Anamallai Forest in this respect, which is only and I believe, can only be worked in the healthiest season. Doubtless at some seasons there is great sickness at Mudumallai, and as there is no European Assistant or Overseer or medical attendance of any

kind, the whole of the supervision and prescribing for the sick devolves upon the Superintendent of the Forest, and those unacquainted with the working of a Forest have little idea of the difficulties that have to be encountered when fever breaks out and disables a large number of the Sawyers, Drivers, Coolies, Maistris, &c., but I am happy to say that since I took charge in December last there has not been more than the usual amount of sickness in the Establishment. The Mudumallai Forest is the only place that the Nilghiri Hills can be supplied with Teakwood from. The Sigúr Forest is well nigh exhausted, the price of Anamallai timber is too great, in consequence of the demand on the coast, and the Mysore Forests are too distant. It therefore appears that should the Madras Government contemplate erecting many buildings on the Hills, it will become a question for consideration, whether the lease of the Forest should be renewed or not. I am given to understand by Captain Farewell, Special Executive Engineer, Wellington, that should the proposed Jail be built at that Station he will probably require 40,000 cubic feet of Teak. This can be supplied from the Ootacamund Timber Yard and Musnigudi as required.

(Signed) W. A. GIB, Captain,

Assistant Conservator in charge of Mudumallai Forests.

Ootacamund, *9th May* 1861.

APPENDIX D.

No. 54.

To Captain H. R. MORGAN,

Officiating Conservator of Forests.

Sir,

1. In reply to your letter No. 458, dated 16th April 1861, I have the honor to inform you that as I have only had charge of the Forests for two months I am unable to give you further information than is contained in my last reports. No timber is supplied from the Wynad Forest (reserve) nor have any Forest improvements been effected for the bringing out of wood. This Forest of large extent has been partly traversed by me, and I am now on my way to Wynad to visit it again. The system of robbery and spoliation, I believe, is suppressed, and no Teak timber is now allowed to pass into Mysore without permission, nor is cutting Teak permitted. My peons by constantly patroling the Forest, its boundaries, and by watching the outlets to the East, see that these Orders are upheld.

2. The Mysore Forests are worked under the management of the Superintendent of Astagram. Its conservancy is under me, and all irregularities are reported by me. I am now traversing these Forests and making arrangements for Teak Nurseries. A better description of part to enable us to carry large logs will shortly be introduced. Hona and Muttee wood are now permitted to be cut in the Hunsúr Forest; and this season Teak alone will be cut in the Inoor Maree Gudy Forests. Teak has brought a very good price this season at the Mysore Government sales. I beg to bring to your notice that it would be of the greatest advantage to the Mysore Government if the charge and collection of Sandalwood were placed under the Assistant Conservator; but this responsible duty could not be undertaken unless the Assistant's services were placed solely at the disposal of the Mysore Government for the purpose of looking after its Sandalwood and Forests.

(Signed) ALEXANDER HUNTER,

Officiating Assistant Conservator of Forests.

Nungungodi, 30*th April* 1861.

APPENDIX E.

CAMP DENKENCOTTAH, *2nd May* 1861.

No. 221.

To CAPTAIN H. R. MORGAN,
Acting Conservator of Forests.

SIR,

1. I have the honor to submit herewith my annual Report of the Salem Forests, for the official year 1860-61.

2. TIMBER.—The great demand for timber has been for sleepers for the Madras Railway; this has continued throughout the year, but not to so great an extent as it was for the past year. The demand for timber for house-building, &c., has been the same as last year, with a slight increase.

3. SLEEPERS.—I am glad to say there is a marked improvement in the supply of sleepers for the past year. In District six, the Engineer, Mr. Hederstedt, informed me that he is receiving none but sawn sleepers; if this system could be introduced on the line, I have no doubt the sleepers would last a much longer time, and a better description of timber will be brought into the market. The present system of adzing the log into one sleeper must be very injurious to the Forests.

4. WOODS.—The description of timber now used for sleepers are Vangé, Ácha, Kulle Muddaray, Muddaray, Sál, and Shullawengee.

5. VANGÉ.—This wood is now becoming scarce. The best logs have been taken out by Wood-merchants for building materials, which fetch a much higher price in the market than the Railway Company are paying for their sleepers. I have known as much as a Rupee a cubic foot to have been given for a good log of Vangé.

6. ÁCHA.—This wood is very seldom used for sleepers on account of its hardness in resisting the augers, boring instrument, &c.; but the Natives are very fond of this wood for house-building and for decorating their temples. Several cartloads of this timber have been taken out of the Cottiputty jungles during the past year.

7. MUDDARAY.—This and Kulle Muddaray, both of the same genus, are very largely used for sleepers. A good supply of this timber can be had from the Cottiputty and Chittarey jungles. I have seen Muddaray trees in the Cottiputty jungles of seven feet in diameter, but these trees are very rarely selected by the wood-cutters.

8. SAL.—A small sprinkling of this timber is to be found in these jungles, but of a poor description.

9. SHULLAWENGEE.—All the Acacia tribe are well adapted for sleepers, but few of them attain the size required by the Railway Company.

10. TEAK.—This most valuable wood, I regret to say, does not arrive to any size in these jungles, there are cases of trees attaining to three feet in diameter, but these are very rare. On the Yellagiri, Javady, Chittery and Shevarey Hills, thousands of saplings are to be found, and with little attention and care, these in a few years will be fit to cut into sleepers. The custom of the Malliallies in setting fire to the jungles year after year has destroyed many of these young plants, and others have been removed by wood cutters for spokes and felloes of wheels, as soon as they attain to any size. This year much has been done to put a stop to the jungles being fired.

11. SANDALWOOD.—Several thousands of young plants are to be found on the Hill ranges of this District; the yearly practice of setting the jungles on fire prevents great number of them coming to maturity, and those that are nearly fit to cut are removed clandestinely by Malliallies and others, and the billets taken into the North Arcot District. The head man of each village should be made answerable if any trees are cut in his range, this would to some extent put a stop to theft.

12. SATINWOOD.—All the best trees have been cut years ago, but there are thousands of promising young saplings coming on, and by strict vigilance I hope to be able to supply the wants of the Gun Carriage Manufactory.

13. BAMBOOS.—Immense quantities of fine bamboos are brought into Salem for Trichinopoly and other Districts, these are cut from the slopes of the Shervaroys and conveyed into Salem by carts and coolies. Others again are taken to the Railway stations of Tripatore and Vaniambady to be conveyed by rail to Madras and other large towns; these latter are cut on the slopes of the Javadies. Hitherto there has been no tax (except in one Talúq of this District) for this most useful produce of the jungles. I beg to suggest that a tax of 12 annas may be levied upon each bandy load of bamboos.

14. FIREWOOD.—From 50 to 100 bandy loads of firewood are taken into Salem daily, cut from the surrounding jungles within 15 miles of the town of Salem. In Dr. Cleghorn's report submitted to Government for the official year 1859-60, it is there mentioned that a seignorage fee from 4 to 8 Annas a cart load is levied on this article in five Districts of this Presidency. As the consumption of fuel has been very great of late years in this District, I consider that a seignorage of 6 Annas per bandy load will be necessary for the preservation of the jungles.

15. GENERAL FEATURE.—Judging from the few sholas that are now remaining, and from the information that I have obtained from the Hill people, I should say there must have been some magnificent Forests in this District fifty years ago. The constant practice of Punacád cultivation by the Malliallies has a great deal to do in destroying the jungles, and where sholas formerly stood, you see now nothing but stunted jungle. The mode of renovating Forests by planting, in my opinion, will not answer in this District, on account of drought that is so much felt here, that to attempt to form plantations will be fraught with great uncertainty and loss to Government.

16. SYSTEM.—A seignorage fee of one Rupee per bandy load is levied on all timber for house building materials by the Collector's Peons, and to those that wish to supply sleepers to the Railway Company the seignorage has been exempt, the consequence was the wood-cutters took advantage of this, and sold their sleepers in the market rather than take them to the Railway Company. I brought this to the notice of Dr. Cleghorn and Captain Morgan, and proposed to them making the wood-cutters pay the seignorage for their sleepers in lieu of the Railway Company, and also they should take out a license for not more than fifty bandy loads at a time, and pay the amount of 50 Rupees in advance; by this system the Collector's Peons are not required to collect the tax as formerly. Captain Morgan on his tour of inspection proposed the pre-payment system to Mr. Brett, and requested that I should be allowed to receive the tax and forward it on to the Collector's Treasury. This the Collector has concurred in, and from the 1st of March the new system has been introduced with satisfactory results. The returns for the past two months have been 1,150 Rupees.

17. ESTABLISHMENT.—At present my Establishment consists of one Overseer and 12 Peons. As there are five Talúqs and about eight outlets to each Talúq the present Establishment is quite inadequate to the wants of this District in conserving the Forests. This subject has been laid before Government by the Acting Conservator of Forests and the Collector, and it is unnecessary for me to go into details.

18. RULES.—A set of Forest Rules for the preservation of jungles in this District should I think be published in the District Gazette for the guidance of those that wish to cut Timber in these Forests. (*Vide* Appendix J.)

19. DENKENCOTTAH FORESTS.—These Forests have only just been made over to the Forest Department. I am therefore unable to give any opinion on them. One Overseer is in charge of these Forests, and the receipts for the past 3 months have been Rupees 738.

(Signed) L. BLENKINSHOP,
Asst. Conservator of Forests Salem.

APPENDIX F.

OOTACAMUND, 10*th May* 1861.

No. 8.

TO THE CONSERVATOR OF FORESTS.

SIR,

I have the honor to forward the usual Administration Report for the past year of the range under my charge.

2. Having assumed charge so late as the 26th January last, I am unable to furnish an account of extended operations of the work in this range.

3. The appointment is a new one, having only been sanctioned as recently as 2nd November last; the duties connected with it are,

1st. The Conservancy of the innumerable Sholas on the hills.

2nd. The planting of such of them as are cut down with quick growing trees adapted for fuel.

3rd. The arranging for the supplies of firewood and charcoal to the stations of Ootacamund, Wellington, and Coonoor; and,

4th. The oversight of the experimental Australian plantation near Wellington.

4. The first of the above, viz., conservancy of the Sholas, without the aid of the Revenue Authorities is an impossibility. I find that young saplings are being continually cut in Sholas, still the Forest establishment has never brought up any one for thus transgressing. The Burghers are those who are chiefly engaged in this illicit transaction, and as every nook in their neighbouring sholas is known to them, it is a most difficult matter to catch any one actually cutting or carrying away wood from the sholas. I would therefore beg leave to suggest that on my finding any young saplings cut in a shola, and reporting the same to the Collector, he be empowered to fine the Monegar of the Nado in which the shola is situated. This plan I feel assured would check the waste now going on. It may not be out of place to state here, that on my assuming charge, I learned that the Collector had established a rule that each Burgher requiring wood to build a hut was to pay a certain seignorage to Government for the wood cut down, but up to the present time I have not received one Rupee on the above account, though lots of wood have been taken away for building purposes.

5. Another cause of great havock is the annual burning of the grass by which many trees at the edges of the sholas are destroyed, for the prevention of this the Revenue Authorities ought to lend their aid.

6. As yet no young trees have been planted out, in consequence of there being none ready for that purpose, but I have started a Nursery in one of the sholas cut down by the last firewood contractor, which I think ought to furnish trees sufficient for planting this and another shola cut down by the same person. It must be evident that it is out of the question fencing in such large sholas, at the same time it is necessary that cattle should be kept out of recently planted sholas, and therefore I suggest that the Collector be empowered to fine the Monegars should cattle be found trespassing in the newly planted sholas after they have been warned to prevent them grazing in the neighbourhood of their sholas.

7. The supplying of Ootacamund with fuel for one year from 1st April last, was sold by public auction on the 12th March and produced Rupees 3,900, the purchaser being Mr. Wilson, who has permission to fell the trees in the western portion of the Governor's shola; the Contractor seems to be working very fairly, but a constant watch requires to be kept over his people to prevent them from cutting trees on the margins of the streams.

8. The contract for charcoal was made about a year ago, but owing to the Contractor cutting in spots where it was forbidden, his Contract has been annulled, and it was put up to auction on the 8th of this month, and realized Rupees 260 for the year. The charcoal to be burnt in the same shola as formerly, viz. the Devy shola.

9. The contract for supplying firewood and charcoal for one year from 1st May to Wellington bought at public auction by one Moideen for Rupees 2,400, and would have produced more, but Colonel Woodhall who has been felling largely for a Coffee plantation in the vicinity of the Cunur Ghat disposes of his wood to coolies at 6 Pies the load, who find a ready sale for it at Cunur, which station is thus generally supplied. I consider means ought to be adopted to prevent a recurrence of this. Coffee Planters prefer Forest land as better adapted for the growth of Coffee, and it is granted on the same terms as grass land, but when they pursue the course of selling this wood as fuel, I think Government ought to fix a seignorage on every load carried out of the Plantation for sale.

10. I regret I am unable to give flourishing account of the Australian Plantation at Wellington, most of the ground planted appears to me ill suited for the purpose, trees which have been planted for three years and upwards are stunted, and parts of the ground have been planted two or three times without success. I would recommend that instead of planting the whole ground, only such portions as seem suitable for the purpose be planted. I much fear that many years must elapse ere any return can be looked for. In one small portion of the plantation the trees are strong and healthy, it is a well sheltered nook with good soil. The money granted for the carrying on of this experiment is now nearly expended, and a further supply must be obtained if the plantation is to be continued. I subjoin what has been done in the plantation since November 1850, the date of last report.

Twenty-nine acres have been planted with 35,000 young trees.

Three acres of ground are cleared, and part pitted and part trenched ready for planting.

About 20,000 seedlings are in the Nurseries ready for planting out.

A new Nursery is being established in a better locality.

Some 300 or 400 young trees fit for poles might be thinned out, but at present there does not seem to be a ready sale for them.

The amount expended up to the 1st May, of Rupees 2,500 granted by Government, for which accounts have been made out, is Rupees 1,656, and a claim is preferred by the special Engineer at Wellington for about Rupees 600 on account of stores, &c., furnished a long time ago.

(Signed) J. H. M. BABINGTON, Major.
Assistant Conservator of Forests, Neilgherries.

APPENDIX G.

No. 374.

NORTH CANARA,
SIRSE, 27*th May* 1861.

From W. FISHER, Esq.,
Collector of North Canara,

To CAPTAIN H. R. MORGAN,
Acting Conservator of Forests.

SIR,

1. In forwarding Mr. Müller's Forest Report for 1860-61, I cannot but think, that the financial results will be deemed satisfactory. We have not only a large income, but a large stock of timber also, though we can only show what has actually reached the Depôts.

2. I concur with Mr. Müller in thinking, that immediate attention should be paid to the reorganization of the Forest Department, on a scale commensurate with the work to be done and the revenue obtained from the North Canara jungles.

3. On this subject, however, I have appended a note to Mr. Müller's letter on the subject, herewith submitted.

4. I have no doubt that the Forest and Revenue Departments cannot be separated without injury to the interests of both, and it is a subject of regret to find, that the relations between them are not of as intimate a description as they used to be, when the Department was more immediately under the Collector.

5. I take the greatest interest in Mr. Müller's operations, having witnessed and been largely concerned in every step taken in Forest conservancy in this District, but it is otherwise with my subordinates, and the creation of a separate conservancy has led to a loosening of bonds, which, with Natives, is sure to take place when direct responsibility is removed, and room is given for Departmental jealousy, or the want of interest which is usually displayed by them, in all matters in which they are not personally concerned.

6. Under any circumstances, I would urgently press the immediate consideration of a scheme for re-organizing the Department, and therefore beg to call your attention to my remarks on what Mr. Müller has designated his private report.

7. Mr. Müller's account having proved to be incorrect, has been returned to him for revision; but I need not detain his report, and will transmit the enclosure as soon as it has been received and examined in this Office.

(Signed) W. FISHER,
Collector.

To CAPTAIN H. R. MORGAN,
Acting Conservator of Forests.

SIR,

I have the honor to submit herewith my annual Report on the North Canara Forests.

I. FINANCIAL RESULTS—1. The enclosed Account Current shew a credit of Rupees 2,53,149-2-8, and a debit of Rupees 78,394-7-1, thus leaving a balance of net profit of Rupees 1,74,754-11-7. This is the largest sum ever realized, but still there is nothing extraordinary that would call for remarks. The Account Current exhibiting but the actual cash transactions, cannot show the total of the business done.

2. The "Memorandum of wood unaccounted for" shows a stock of timber on hand of the estimated value of Rupees 1,54,006. This statement, though it shows the timber cut and conveyed to Depôts under the superintendence of the Establishment, cannot exhibit the total of our transactions. Several thousand candies of wood are cut annually as clearings from lands taken up for cultivation which are not in this account; there are also several thousand trees annually sold by auction in the Forest, all of which, when cut by the Contractors, have to be numbered and measured.

3. Annexed is a comparative statement exhibiting the proportion each Taluq has in the receipts and expenditure under the different headings.

4. The receipts under Teak are not so large as they had been in former years, but they have vastly increased under junglewood and clearings. The difficulties in conveying Teak from the Forests to the coast have also increased unproportionably, which will, however, be reduced when the project of clearing the Kalanuddy has been carried out.

5. *Clearings* from the cultivation lands form now annually a large item. Last year we had circa 20,000 pieces, containing about 8,000 candies which sold for Rupees 36,000. There are many places taken up for permanent cultivation, and the wood growing on such lands (mostly inferior) is now cut and disposed of by the Forest Department. This entails a vast amount of work and trouble, but in the end it is a well paying business.

6. The profit of the seignorage account is Rupees 6,323, which at 8 Annas per tree, to the residents of our District, gives 12,646 trees for local consumption. According to the new rule, all wood granted to residents of the District has to be paid for by the candy. Taking the above number of trees as the annual local want at 1½ candy each at the average of 8 Annas per candy, the realization would be Rupees 9,484. In the absence of more reliable data, it is too soon to build any calculation on the above.

7. *Bamboos* have given a profit of Rupees 4,653, which at Rupees 9 per 1,000 (average rate) gives about five lacs.

8. Having reported on *fuzewood* of North Canara in my remarks on Rule 10 for the Coimbatore District, I have no further remarks to make.

II. ADMINISTRATION REPORT—1. It need scarcely be remarked that on account of the ready market for all kinds of wood our North Canara Forests desire the best attention. This fact renders the conservancy here much more difficult, and necessitates a much larger Establishment than in other Districts, where there are no roads or rivers, and consequently no such ready market. This, however, appears to me to have been much overlooked, else my recommendations with regard to the Establishment would have received more attention. I have only to refer to the fact, that the Establishment, fixed and temporary for the District, with all the allowances, costs only Rupees 11,770-15-11 whilst in 1859 and 1860, the fixed Establishment charges alone for the small portion of the Coimbatore District (Anamallai Forests) amounted to Rupees 12,220-5-6.

2. In North Canara it need scarcely be said that we want an extension of the Conservancy system, as it embraces already all kinds of trees. The greatest want is strong healthy and intelligent Overseers, who take an interest in the business. It is not affirmed too much, if I assert, that a few hundred Rupees more pay to the establishment would be a positive gain. I beg to refer to my private report on this subject dated 21st April 1861.

3. PLANTATIONS—Up to this year our plantations have always failed, because, I could not give my time for this work, and had no one of the Establishment who could do the planting business. This season, a large piece of ground was prepared, seeds were sown, and thousands of them germinate every day, which in due time will be transplanted. The old seedlings of Teak and Black wood thrive well.

4. Coomry grants have been much reduced this year and I hope we come gradually to the conviction, that a total abolition would in the end be best for the people as well as for the jungles. In North Canara it cannot be said that Coomry might be cut in certain parts where the jungles are not valuable, because all our jungles are valuable, if not now, they will be so in future. A single road passing through the jungles makes a vast difference. For instance, six years ago no one would have thought the timber on the Kyga ghat of any value (now all consumed by Malapur Bacanapah), but now, as the road over this ghat will soon be open, the wood so recklessly burnt for coomry would be worth lacs of Rupees.

5. *Cutch* was formerly extensively prepared for exportation; but, now cuttings have been stopped on account of the dishonesty of the Contractors. I have repeated applications for cutch trees, but I am as yet not clear under what rule to grant the cuttings. Whatever rule is adopted, people will cut 20 times the quantity allowed. I am inclined to try an export duty on prepared cutch.

6. *Land for Coffee* could be taken up in Supah Taluq. The ground is admirably suited and lies sufficiently elevated 1,200 to 2,000 feet. Most of the Natives in Supah have a few plants in their gardens, even the Coomry cutters whom I often advised to extend their plantations, instead of cutting coomry, but they will not. Now, as Beitkul will be opened, European planters ought to be encouraged to raise plantations, which, I think, would improve the Supah Taluq and its inhabitants, an impossibility so long as coomry exists.

9. COTTON.—Jungle land, 24 miles from the coast, has been taken up for cotton cultivation. The experiment is being carried out on a large scale, and from what I can judge, I believe it will succeed. The second crop came out with great vigour in these last hot months, and the plants retained their vitality. If this experiment is successful, thousands of acres of scrubby jungle land, unfit for rice cultivation, will be taken up, and be turned into cotton fields.

10. The great desideratum in our District is a Revenue survey, without which, a systematic Conservancy is an impossibility. It is utterly out of my power to know each of the many 100 of jungle places asked for cultivation, whether or not it would be advantageous to have them cleared or reserved, and as for the Establishment, if some of them are ordered to report on the piece of jungle applied for, it depends much on the amount of bribe or other influences which makes the Forests either valuable or not.

11. The close connection of the North Canara Conservancy with the Revenue Department renders it desirable in my opinion that this should not only continue, but that it would be better if our Department should, as it did before, form part of the Collector's. I ought to be an Assistant to the Collector and not Assistant Conservator, not that the official name makes any difference to us, but it does to our respective Establishments. Without the Collector and his Establishment

I would, in many cases, be unable to carry out my plans. Should the Establishment form part of the Collector's as it did before, the Collector would have better means to promote deserving men of my Establishment in other Departments, or transfer such as would be better off some where else, or also reduce them if necessary. At present my *Mutsuddies* on a pay from 8 to 15 Rupees are condemned to this salary, there being no chance for promotion, nor could I reduce them if necessary, in this Department, the pay being already too low, and any reduction would only increase the amount of other pilferings, so extremely easy here.

12. The past year was one of great difficulty. There is not a man of the Establishment, except myself, who has not been sick more or less. A great deal of work had to be executed by substitutes. The workmen also were nearly all sick and many of the works were retarded. Of the Contractor's coolies at Seiwapur and Kanery many were sick for a long period, 13 died, in consequence of which 47 men ran away to Mangalore. It is true, the North Canara jungles are healthier than many other Forests of the Presidency; but it is nevertheless a fact that many Europeans as well as Natives cannot stand living in our Forests.

Sedasheegur,
13*th May* 1861.

(Signed) S. MÜLLER,
Asst. Conservator of Forests, North Canara.

APPENDIX H.

Mangalore, 6*th July* 1861.

From J. FRASER, Esq., *Collector of South Canara.*

To Captain H. R. MORGAN, *Acting Conservator of Forests.*

Sir,

1. I have the honor to forward herewith the accompanying Statements, showing the transactions of the Forest Department, during the past official year 1860-61.

2. The revenue of the year under report amounts to Rupees 9,951-3-0, the greater portion of which is derived from Sandalwood stills. The increase from this source during the past year, as compared with the previous, is Rupees 4,294-15-2.

3. The revenue of the year under review exceeds that of the previous one by Rupees 4,409-5-3, as shown in the margin.

1860-61	Rs...	9,951 3 0
1859-60	,, ...	5,541 15 9
	Rs...	4,409 5 3

4. The increased price obtained of late years for Sandalwood-oil, has attracted the attention of the merchants of the District who consequently made larger purchases than usual of Sandalwood in Mysore, and hence the increase in the number of stills.

5. The supply of fuel required for the use of the Stills, was regulated last year by the same rules, as were in force during the preceding year. On the sale of the present year's contract, however, the Sandalwood Still Contractors were told that they would have to pay for their firewood at 4 Annas per tree, the trees being marked and made over to them from time to time by the village Potails, who will be paid for their trouble by a fee of 2 Annas on the Rupee. Consequent on this arrangement, there will be a considerable decrease in the revenue under this head in future years, though there will be a proportionate increase under that of seignorage.

6. The increase of Rupees 160-13-4 in the revenue under the last named source, arises from the growing demand for timber both in the District and in the town of Mangalore.

7. As regards charcoal used by iron smelters, they have made the same hitherto without any payment. It has been determined that in future they shall pay a seignorage of 6 Pice for each mura of charcoal they prepare, of which 2 Pice will be given to the village Potails to encourage them to keep a strict account of the amount used.

8. It is proposed in the coming season to commence plantations of both Teak and Blackwood, with this view, supplies of seeds have been written for both to Malabar and North Canara. It is also proposed to sell a quantity of rejected Teak which is now standing and only going to decay in the Sullah jungles, and a number of Poon trees, a few fit for 2nd and 3rd class spars, but

the majority fit only for boats. From these two sources there ought to be a net return of at least 3,000 Rupees, but to enable the Department to secure this income, and perfect the planting and pruning operations which are contemplated, the sum* already allotted for the South Canara Forest expenditure should be increased by 1,000 Rupees, and I solicit your aid in procuring sanction for this additional sum.

* Rupees 2,000, Government Proceedings dated 16th April 1861, No. 815.

(Signed) J. FRASER,
Collector.

To Captain H. R. MORGAN, *Officiating Conservator of Forests.*

Sir,

1. In compliance with the subject of your letter No. 459 of the 16th ultimo, I beg to forward the following Report on my proceeding, during the official year 1860-61.

2. Supply of Timber.—I cut no timber, I merely mark the trees and then they are given out to merchants who pay a seignorage of 6 Annas per candy, on as many candies as they think they can cut and bring down to Mangalore in one season. During the year, there has been seignorage paid on 3,128½ candies which amounts to Rupees 1,173-3-0.

3. Bamboos.—These are given out to the merchants also on payment of a seignorage of 8 Annas per 100. During this year there was 1,87,608 bamboos cut. The seignorage on which amounts to Rupees 928-0-8.

4. Confiscated Timber.—Under this head I have placed the timber that was cut and left behind by the merchants last working season. Of this timber we had 263¼ candies, the auction price of which amounted to Rupees 541-11-0.

5. Boats.—The timber merchants are allowed to make boats of jungle wood for the purpose of carrying their provisions, a store of which they have to take with them down the river for themselves and coolies. They are charged 3 Annas per running foot on all boats that they cut. There were twenty-one boats cut this year, the seignorage of which amounts to Rupees 76-11-0. The name of the wood chiefly cut for boats is Doope,† it is a soft wood and is fit for nothing else. A boat made of it will last in salt-water for five or six years, but it would not last over two in fresh water.

6. Sandalwood Stills.—There were 594 Stills at work, the revenue of which amounts to Rupees 5,037-4-0. The stills are all erected in the Udipy Taluq along the foot of a range of hills known as Ander Ghat. The soil is poor in this locality and the jungles inferior. A good tree of any kind being seldom met with, but even if there was good timber in this part, it is too far from the river, and the present market value of jungle or common wood, would not pay land carriage.

7. Engineer's Department.—During this year their supply amounted only to 10 candies of jungle wood and 3,108 bamboos, and as they cut the timber and bamboos themselves and paid the usual seignorage on them, the amount is included in that of timber supply.

8. Firewood.—This still continues to go into the market free of duty, and without an Establishment or a constant watch on the roads and rivers in the District it must continue to do so. In the beginning of the year under review, I got an offer for a contract* to supply the town of Mangalore with firewood, but when the time came for making it, the man did not appear, so there was no contract made. His reason for not taking it, I am unable to ascertain. I have not seen him since; but I rather suspect he was frightened out of taking it by others who knew, that if a contract was once made for firewood, it would put a stop to bringing it in free.

* This is the contract alluded to by J. Fraser, Esq., in his annual Report on South Canara Forests, for the year 1859-60 H. M.

9. Timber supplied to Ryots by Potails.—I am unable to say any thing under this head, as I can get no information from the Tahsildars or Potails. On my annual tour through the jungles I call on the Potails to show their books; but the answer I invariably get is, that they are sent to the Talúqs, and if I write to the Tahsildars, they do not answer my letters, or if by chance I get an answer, it is to say that they have no time to attend to the subject of my letters;

† Vateria Indica.

so, between the Tahsildars and their Potails, I am kept perfectly in the dark concerning the working of the above system; but, as far as I can understand from other sources, the system is not working well. There is a quantity of timber cut in the year under this head, but I am led to believe the money received is very little.

10. Charcoal.—No person in this District seems willing to make a contract for the supply of charcoal. The town of Mangalore is supplied from the Malabar jungles.

11. Blackwood Contract.—In the beginning of the year there was a contract entered into with A. J. Saldanha, to cut and bring to the coast 1,020 trees of Blackwood, and as he had to girdle, cut and prepare the logs for the market, the time allowed him was three years and six months. He has failed in his agreement, and the Collector intends to hold him responsible for any loss that may arise by the re-sale of the contract. The fact is, he bid too low, if he fulfilled his contract, he would lose at least one Rupee in each candy, he sees that now, and considers the first loss best (*i. e.*) the loss of his deposit money.

12. Pruning.—The following abstract table will show the number of trees pruned and registered during the working season in the Súliah jungles.

Abstract.

Teakwood.		*Blackwood.*	
Young trees...	976	Young trees...	249
Saplings...	6,402	Saplings...	348
Plants...	38,162	Plants...	54,478
Rejected trees...	2,122	Rejected trees...	17
		Ripe do.	38
Total...	47,962	Total...	55,130

Of the rejected trees in the above table, some are partly burnt, some are broken by the fall of larger trees and some are old and hollow. None of them will improve by standing any longer, and as we have no teak of any kind in the market, I intend to have them cut and brought to the Coast, either by my own Department or by contract. I have seen the greater part of those trees myself, and I am of opinion that their average measurement would be about one candy a tree.

13. The expense of pruning the above number of trees amounted to Rupees 333-14-7. Pruning is now stopped as the coolies are all employed in field labor. The larger half of this jungle has yet to be pruned; but the cooly labour will not be procurable before January next. The Duffadar and three Peons that were appointed to look after the pruning of this jungle (with the sanction of the Collector) kept on the strength of my temporary Establishment, as I think it advisable to have some one to look after this part of my range. My other Duffadar and four Peons being fully engaged with the timber merchants, have no time to spare, so that if the Duffadar and Peons at present in it were discharged, it would be left to itself as formerly, and my annual visit is not sufficient to conserve it, especially as I get no assistance from the Talúq authorities.

14. Planting.—I have got some excellent planting ground along the banks of the Pinsveny river (Súliah), but the want of assistance has prevented me from doing any thing yet. In January last, the Collector ordered the Tahsildar of Puttur to gather some Teak seed* with the view of having some nursery beds formed; but it was found after the seed was gathered that it was all bad; before this was found out, the time for gathering more seed was past, so it had to be given up for this season.

*Should have come from Nellambur H. M.

15. I have now touched upon all the points connected with my Department, and some of them are unsatisfactory enough; but, it must be borne in mind, that I have no assistance whatever. I have to do everything and see everything myself, and Talúq authorities being jealous of their authority, make my operations, if possible, more difficult than they otherwise might be.

16. The whole of the timber and bamboos brought down this year, I had to measure and count with my own hands, and at the same time I had to superintend the pruning of a jungle thirty miles distance from the place where timber was measured.

17. In conclusion I have to state that I have met with every possible assistance from J. Fraser, Esq., the Collector. He has several times issued orders to the Talúq authorities, but they always found means to delay their fulfilment or to avoid them altogether.

(Signed) E. THOMPSON, *Overseer,*
Forest Department, South Canara.

Uppanangadi, 9th May 1861.

APPENDIX I.

Madura.

1. I have the honor to submit the following brief Report of my operations, together with the annual accounts of the Madura Forests for the official year 1860-61, countersigned by the Collector of Madura.

2. In July 1860 the system of selling full grown standing trees in Government Forests was brought into force with the Collector's approval as a temporary arrangement. The rate being 5 Rupees for Teak, Blackwood, Vengé and Anjelly, and for the tops and butts 2 Rupees per bandy load. All other kinds, such as Puluchee, Kusturee, Kungilium, Veekalee, Karungalee, Kadumbai, &c., 2 Rupees per tree, and when taken by the bandy load one Rupee. Provision was made in the case of *bond fide* Ryots to cut what agricultural implements they required free of charge from among trees of an inferior or stunted sort, such as Odusally, Munjanatty, Vulkai, and Usil; and such of the first mentioned trees as were clipped, hollow or stunted were sold at 2 or 1½ Rupees each, and those of the last mentioned kinds if found in similar condition at half a Rupee each.

3. By this arrangement a considerable amount of timber for building purposes was cut during the year, and I may say is increasing in demand. I have granted 292 licenses for permission to cut 1,635 bandy loads of timber, the seignorage fee is invariably collected by the Officers of the Forest Department, by whom also the trees are marked and given over to the purchasers without the least inconvenience.

4. The trees marked were mostly Vengé, Teak, Blackwood and Vaugé. The first two mentioned trees are in great demand in the District as the Natives value them very much; but I regret to state, that the method of felling is without judgment and great waste of timber is the result; thus for instance, after a tree has been marked by the Forest Establishment and delivered over to the purchaser who is generally a wood-cutter, the axe is laid one yard and a quarter from the ground, while others waste by hacking over a broad surface. I believe this is owing to the want of trained wood-cutters, as felling and squaring timber have never been made a constant employment by Natives in the District.

5. It is remarkable that stunted (in some instances young) trees and small pieces of wood easily removed on carts sell the best in proportion; the reason of this is, that the unskilled woodcutters are unable to split up the larger trees into joists. This is one disadvantage of the present system of granting licenses for felling trees, as it leads to the destruction of young trees while the larger ones are left standing. Another disadvantage of the present system is that the forests are not worked in succession, as the applicants are allowed to cut and convey timber from the Forests nearest to the village, hence the Forests on the North and South face of the Pulni hills and in the Cambam valley are constantly worked. The only method I can see of preventing this is, that the Amani system now pursued in the other Forest Districts should be adopted immediately in this District also, and the sale proceeds of the timber will then undoubtedly increase and Government derive a paying revenue from these Forests. For although the Madura Forests are of considerable extent, it is of the utmost importance to preserve those finer portions which are easily worked.

6. So far as I can judge, about 3 to 4,000 logs of sizes will be required to supply the annual demand of the bare country to the eastward, and in the event of the Amani system

being introduced into this District, it should be one of the principal duties of the Forest Department to regulate the felling with a view to this permanent demand and the prospective requirements of the G. S. I. Railway from Salem through Carúr to Madura will probably oblige us to indent upon the Cambam Forests. I propose to form Depots at the following places. Balasamuthrum, Virupátchy, Periacolam, Cambam and Nattam (see Trigonometrical map) and should Government take the managment of working the Forests under the Amani system, I believe one or two Elephants would prove economical in dragging logs of great length from the hills which are in great demand and which cannot otherwise be managed.

7. Besides the supply of timber for buildings purposes, a considerable number of bamboos were cut by traders during the year on the Virupátchy hills (North face of the Pulni hills) where alone they are found in great numbers. I granted 270 licenses for felling 40,722 and thus realized Rupees 272-3-10, the tax being 1 Rupee per thousand, and 8 Annas for the smaller sort.

8. Since the discontinuance of the renting of the Forest products such as gums, dammer, honey wax, fruits and leaves in medicine; great depredations are committed in the Forests in collecting them clandestinely by those persons who formerly rented them from Government. Thus in collecting fruits and flowers, branches of trees are brought down, barks of trees are entirely stripped off, and such careless treatment of trees cannot be checked by the present small establishment I am now allowed. I would suggest that the old plan be adopted, as it would not only be a source of revenue to Government, but the renters would be made responsible for any destruction that might be committed in the Forests. I am of opinion that should Government take the control of working the Forests, it is desirable that the Forest products should also be collected and disposed of by them.

9. The prohibition of Coomree cultivation so much practised in former years in this District is a perfect success. I would propose that permission to cultivate a new field should in every instance be obtained from the Revenue authorities after the spot has been inspected by the Forest Officer in charge.

10. As the new settlement of Kodakanal is rising into importance and the number of visitors is on the increase, I have been obliged to lay a seignorage fee of 5 Annas per cart load of wood cut for fuel in the Kodakanal shola, the amount realized has fully covered the expense of keeping up a Peon for the preservation of the shola.

11. It is remarkable that no notice has been taken up to this time of the Sandalwood jungles on the Pulatur hills. I have on more than one occasion visited these jungles; most of the larger trees have been cut and taken away clandestinely and the young plants are now very numerous; a few, however, are large enough to be cut up and prepared for sale. Vigilant supervision is absolutely necessary to preserve them from fire, creepers and smugglers, as the larger trees are daily lessening.

12. In conclusion, I have the honor to remark that the Establishment now sanctioned for this District is almost too small to carry out systematic conservancy. The services of an English writer would be necessary to attend to accounts and other duties which would otherwise devolve on me. The newly discovered Sandalwood jungles on the Pulatur hills should immediately be conserved as an addition might accrue to Forest revenue of the District.

(Signed) E. SPERSCHNEIDER,
Overseer Madura Forest.

APPENDIX J.

RULES FOR THE CONSERVATION OF THE SALEM JUNGLES.

1. No license to be granted for less than twenty-five bandies. The money to be paid in advance. The time allowed in each license to be limited to two months.

2. The license and tickets to be shown when the carts pass the Tannah stations. Each piece of wood to be marked by the Peons, and the number of bandy loads to be entered on the back of the license.

3. If Satinwood is cut, the Department Peons to point out the trees. The seignorage on this kind of wood to be 3 Rupees per bandy load.

4. Ácha maram, Vellé Naga, Vengé, Maddee, Kul Maddee and Blackwood, to be charged 2 Rupees per bandy load.

5. The license to specify the name of the wood to be cut.

6. No wood except Satinwood to be felled when the tree is less than three feet in circumference, at three feet from the base.

7. Peons to proceed with the wood merchant and mark the timber when practicable.

8. The charge for firewood to be 6 Annas a bandy load.

9. Bamboos to be charged as follows:—

A bandy load of bamboos of the larger kind, termed in Tamil, Valai, 12 Annas the load of forty-eight. A bundle of bamboos of the smaller kind, termed in Tamil, Mungil, 6 Pice, per bundle.

10. Persons requiring to cut bamboos to take out a license.

(Signed) H. R. MORGAN, Captain.
Officiating Conservator of Forests.

SALEM, *7th June* 1861.

APPENDIX K.

No. 352.

DENKINCOTTAH, *1st February* 1861.

To THE SECRETARY TO THE BOARD OF REVENUE,
Fort Saint George.

SIR,

1. With reference to the request of the Board of Revenue conveyed in their Proceedings No. 329 of 18th January 1861, as to "how far it is now desirable for Government to obtain, from "the North West Provinces, a few skilled Tea manufacturers, in order to test as fairly as "possible the merchantable character of the leaf as produced in those localities of this Presidency "where the cultivation has been tried, and plants now exist," I have the honor to offer the following remarks:—

1st. To ascertain the market value of the Tea grown on the two plantations of Messrs. Mann and Rae, is of the utmost importance, as until that question is settled, no extension of Tea planting can be looked for.

2nd. As far as a knowledge of the soil, climate and situation can enable one to judge, I am of opinion, that Tea at least equal, if not superior to the Assam Tea which sells for 2 Rupees per pound in the market can be produced. But Tea equal to the Kangra Tea which fetches Rupees 3-8 per pound on the spot, cannot well be produced for the following reasons:—

I. Kangra is in latitude 32° north, and at an elevation of some 2,000 feet above the sea. The best Tea grown in China is at an elevation of 2,000 feet above the sea, and 29° to 30° north.

II. Ootacamund is but 12° north, and allowing 2° northing for every 1,000 feet of elevation, 6,000 feet the best height for the cultivation of Tea (as above that elevation the seed does not ripen) gives 24° north latitude, a little under the mark; but some allow 3° north per 1,000 feet of elevation, if that is allowed, we have a Tea plantation on the Neilgherries at 6,000 feet elevation, equal to 30° north, or the situation most suitable.

3rd. When I was on the Shevaroys in January last, I saw a few Tea plants in Mr. Richardson's Coffee plantation; but these were quite unfit for the experiment, neither do I think the soil or climate suitable for Tea.

4th. I have taken advantage of paragraph 3 to bring to the notice of the Board, the great difficulty that exists of obtaining land on the Hills for the purposes of Tea planting. At present nearly the whole of the Hills at an elevation of from 5 to 6,000 feet is practically held by the Burghers under the more than dubious title of what is called a grazing pattah. Let a settler make application for land in the neighbourhood of a Burgher village; and the land, though it has not been cultivated for years, is immediately claimed by the Burgher village, and a preposterous sum per acre demanded; if the demand be not acceded to, a complaint is lodged and the land pronounced to be Burgher land. I have had personal experience of this, and unless some remedy be devised, the obtaining of manipulators will be quite useless, as under the present rules, land suitable for Tea being unobtainable, colonisation is impossible.

(Signed) H. R. MORGAN, Captain.

Officiating Conservator of Forests.

APPENDIX L.

REPORT *on the Government Botanical and Horticultural Gardens at Ootacamund for* 1860-61.

In submitting this Report, it gives me much satisfaction to be able to state, that considerable progress has been made in the Gardens during the past year. The upper portion of the lower Garden being recently improved by the formation of lawns, flower beds, walks and bowers; while in the upper portion two terraces, and one parterre has been added, and thus gradually year by year, the Gardens steadily progress towards completion.

The Quinine yielding Cinchonas from Peru, introduced by Mr Markham, form the most valuable addition ever made to our Gardens. At the present time we have upwards of 4,400 plants in very promising condition, and more seedlings daily germinating. Many of the imported plants are from 2 feet, 10 inches to 3 feet 2 inches high, and some of their leaves measure 14¼ by 10 inches. The average monthly growth of these plants, being about 3 inches, while the maximum growth made by the most luxuriant shoots since their introduction (five months) has been 18 inches, which gives a monthly growth of upwards of 3½ inches; but some of the shoots have grown 8 inches during the past month; while during the first month, they scarcely grew any, as they were checked by being transplanted out of the Wardian Cases, in fact, some of the plants have only recently fairly recovered from the disease and damage contracted in the Cases, and from the effects of being transplanted in a weak state. Therefore it may be expected that the four months yet to come of the growing season, will produce a greater average growth than that recorded above. The first of our seedlings are from 8 to ten inches high, and 9 to 13 inches in diameter across the leaves. The average growth of the seedlings being about 2 inches per mensem, the maximum growth made by the most vigorous plants being 3½ inches.

Plants introduced.	
Cinchona Succirubra or red bark ...	2,361
Cinchona Callisaya, Callisaya bark	6
Cinchona Nitida, genuine grey bark,.	840
Cinchona Micrantha var., ovoinchina.	905
Cinchona Peruviana or Pata de Gallinazo	42
Species without name	298
Total Rupees..	4,452

The above is the total number of Plants on the 9th September 1861.

The Orders of Government of the 3rd July 1861, having placed this undertaking under my superintendence, with an efficient Establishment; the Cinchona operations and progress will in future form the subject of a separate report. Various and conflicting recommendations have been laid before Government, with reference to the cultivation of these plants. On looking over the correspondence I find I have omitted to explain the facts, which have led me to form an opinion in some respects, different from others, with reference to the description and amount of shade required by the plants in cultivation. Many of the travellers on the Andes, while passing through the Cinchona forests, and observing the trunks of the Quinine trees, under the dense shade appear to have lost sight of the fact, that their leaves and branches having overtopped the forest, were exposed fully to the influence of light and air. The leaves are the laboratory in

which the Quinine is formed, and their true position in the natural state of the plant should form the subject of our enquiries. The trunk-bark being merely the repository, its position is unimportant. The following facts induce me to believe, that the leaves and most of the branches *of every* tree which produce Quinine on the Andes, overtops the forest. Von Tschudi, the eminent German traveller, gives the following account of the method by which the Bark collectors discover the position of the Quinine trees. "In the loftier districts of the forests, the Peruvian bark is found. In May the Indians assemble to collect bark, for which purpose they proceed to the Cinchona forests. One of the party climbs a high tree, to spy out the *Manchas* or spots where there are groups of Cinchonas. He is called a *Cateador* (searcher). It requires great experience to distinguish the groups by the tints of their foliage. The *Cateador* then leads the party through the almost impenetrable forest to the group." "Weddell, Poeppig, Karsten, Markham, and other writers on the subject, mention the Cinchonas being discovered by the "hues of their foliage," thus the leaves must overtop the forest, or they could not be seen." Mr. Cross in his notes on the red bark states, "I observed that many of the "red bark" trees, when growing under dense shade, lost a portion of their branches, and sometimes all of them during the wet season, or if not, they assumed a weak climber-like habit, which; if exposed, suddenly at any time to influences of a damp or drying nature, would be likely to cut them off altogether." From these quotations it appears that to secure the existence of the plant requires it to overtop the forest trees to obtain light and air, and Physiology teaches that this is especially necessary for the production of Quinine. Thus it appears that the advocates of *dense* shade, are not borne out either by observation or first principles. I am of opinion that *partial shade* would facilitate the growth of the young plants, by affording them shelter and preventing the heat of the sun from parching and hardening the soil; but, at present, I feel quite unable to say, what description or amount of shade could be employed with greater advantage. Experiments have been commenced with the object of testing this important point. I consider perfect *shelter* to be very necessary.

In this report it may be expected that an outline of the method to be pursued in cultivation, should be given; but, I regret, that, at present, I am not in a position to give this with any degree of correctness. I, however, may mention that we propose to put in the plants at 8 feet apart; and when the trees become too crowded, a certain number will be cut away to afford bark, and give space for the others to attain full size. I would not recommend that the trees left to form the plantation should at any time be cut down for their bark, but that a system of removing alternate branches be adopted instead. The removal of the first pair of branches will probably take place the third or fourth year after planting, and this to be continued until the sixth year, on the seventh year, the new branches formed, where the first were cut off, can again be removed, by this time the tree will have attained a good size, and probably formed from 20 to 30 pairs of branches; thus the pruning off of alternate branches, will therefore progress yearly up the stem for ten or fifteen years, and this would give the branches sufficient age to attain a diameter equal to small trees, and these branches when cut will produce a large proportion of "trunk bark."

In removing the branches, they should be cut off at about a foot from the main stem, in order to give space for the formation of new branches, which would immediately shoot as the Cinchona possesses great power in rapidly developing latent buds.

By this mode of treatment, it appears to me, that a very great advantage will be obtained over that of cutting down the trees; because this would give a constant and yearly increasing supply of bark, without injury to the trees; as at no time would they be deprived of so many branches as would effect the formation of roots, or check the growth of the tree.

Of other plants introduced from Peru by Mr. Markham, I may mention the Cherimoyer, an excellent species of Custard Apple the Schinus Molle or Mastich gum tree, and three varieties of the Aju or Peruvian Peppers. All these are progressing satisfactorily.

Another very important introduction is the green-dye plants from China. In April last I received from the Secretary to the Board of Revenue six plants in good order; namely, four plants of the large variety, and two of the small. All are thriving well, and appear suited to this climate.

Of ornamental plants, the most important are the varieties of variegated Begonias, brought out by Mr. Dawson, and a few new species of Australian shrubs.

FINANCES.—Table A. Appendix exhibits the financial position of the Garden, on the 30th April 1861, of which the following is an Abstract :—

The amount of receipts being

	Rs.	A.	P.
By Seeds and Plants sold	1,624	12	0
„ Government allowance	1,200	0	0
„ Superintendent's salary	2,400	0	0
„ Pay of Apprentice and writer for August and September 1860.	70	0	0
Rupees...	5,294	12	0

The expenditure during the same period, being

For Contingent expenses	496	0	8
To Garden Establishment	2,099	2	8
„ Superintendent's salary	2,400	0	0
Excess of receipts over expenditure	299	8	8
Total Rupees..	5,294	12	0

Table B, shows the distribution of plants, seeds &c., for the official year ending the 30th April 1861.

The total number of Fruit trees, and Fruit bearing shrubs.

Distributed during the year, being...	196		
Timber trees..	5,589		
Shrubs and Flowers..	2,745		
Total No. of plants...	8,530		
and 231 collections of seeds, making the total value of plants, seeds, &c., sent out from the Garden during the year...	2,676	6	4
The amount of this sum realized being...	1,624	12	0
Amount presented to the Ootacamund Improvement Committee. Vide Order of Government dated 24th November 1860, No. 2,223, paragraph 7..	171	3	0
	1,795	15	0
Leaving a balance still due to the Garden, on the year's transaction of...	880	7	4
Total Rupees...	2,676	6	4

In the above, the allowance for the Writer and Apprentices not having been received for many months, has consequently not been brought either to debit or credit on the accounts.

In the official year ending 30th April 1860, the total value of plants, seeds &c., sold from the Garden was Rupees..	1,809	6	0
The total value of the same for the present year, being..	2,676	6	4

which gives the very satisfactory result of an increase of more than one-third.

CONSERVATORY.—The Conservatory sanctioned by Government in 1856, is still unfinished. The amount of the supplementary estimates having (I believe) been expended without completing the work. This is to be regretted, as much of the space in the building cannot at present be used, owing to the leakage from the roof. I have pointed this out to Captain Farewell, the Engineer of the range, and trust the work will shortly be completed.

SEEDS.—The seeds produced here last year are of inferior quality, owing to the extreme drought of last season, the plants did not attain maturity, and consequently produced imperfect seeds.

HEDGES.—The weeping willows have been planted to form hedges in the ornamental part of the Garden, they have also been used to form borders round large flower beds being placed in this manner. These have been found to grow readily, and it is anticipated they will form good borders as well as fences.

APPRENTICES.—The progress of the Apprentices has been most unsatisfactory. The amount allowed being insufficient to induce other than boys of 10 or 11 years of age, to accept the employment; these boys having received an imperfect education at school, think of nothing but play and destruction, and upon whom any attempts to teach, have been thrown away, as it is impossible to make them take an interest in their employment. I would therefore suggest that instead of European and East Indian boys being engaged as Apprentices, that two of the most intelligent and deserving of our Native Gardeners be promoted to Apprentices on the scale given in the margin; these men would carry out carefully and faithfully the instructions they received and therefore would be very useful during their Apprenticeship, and as only men who took an interest in their employment would be promoted, it is likely they would become very useful.

Proposed Scale.				
1.	European or East Indian Apprentice..	20	0	0
2.	Native Apprentices at 7-8-0 each..... ..	15	0	0
		35	0	0
Present Scale.				
1.	European or East Indian Apprentice..	15	0	0
2.	do. do. at 10 each.	20	0	0
	Rupees..	35	0	0

This arrangement would naturally cause emulation among the Gardeners in our Establishment for to merit promotion to Apprentices; and, I think, would be productive of good results. I therefore, trust the Government will sanction the proposed scale, as it incurs no additional charge to the State.

The salary of 20 Rupees per month for an European or East Indian Apprentice, would be sufficient to procure a boy with a fair education and some intelligence; and 7½ Rupees for a Native Gardener would be sufficient to induce the best men that can be had to accept the employment.

In concluding this Report, I beg to tender my thanks to Dr. Jameson, Saharunpore, for numerous valuable Himalayan seeds. To Captain Morgan, Officiating Conservator of Forests, for plants of the Wellingtonia Gigantea and Cryptomeria Japonica. To Messrs. Veitch, of the Royal Exotic Nursery, London, for many ornamental plants gratuitously presented to this Institution.

(Signed) W. G. McIVOR,
Superintendent Botanical Gardens.

GOVERNMENT GARDENS, OOTACAMUND,
17th September 1861.

APPENDIX M.

Dr. Livingstone's remedy against Fever.

"A pill composed of three or four grains of Resin of Jalap, three or four of Calomel, an equal number of Quinine, a drop or two of Tincture of Cardamoms to dissolve the Resin, and Ginger or Cinnamon to form the bolus."

"It ought not to purge, the quantity of Resin must be regulated to produce only a gentle movement, which when felt, is accompanied by perspiration and sound sleep. A check to this perspiration has, in my own experience, given rise to vomiting of large quantities of pure blood."

Copy of Mrs. Livingstone's letter.

"We make a pill of equal parts of Resin of Jalap and Calomel, Rhubarb and Quinine, say, for a powerful man, eight grains of Resin of Jalap, eight grains of Calomel, four or six grains of Rhubarb, and four or six grains of Quinine, make the whole into pills with Tincture of Cardamoms. This relieves the very worst cases in a few hours. We then give Quinine till the system is affected with Cinchonism. The Calomel removed at once from the system, and curiously enough, decreasing doses serve. In some of us half a grain of the mass produces as much effect as twenty-four grains did at first."

(True Extract and Copy.)
(Signed) H. R. MORGAN, Captain,
Officiating Conservator of Forests.

TABLE A.

Account of Receipts and Disbursements of the Horticultural Gardens at Ootacamund, for the official year ending 30th April 1861.

				Rs.	A.	P.	Rs.	A.	P.				Rs.	A.	P.	Rs.	A.	P.
1860	May... ...	To Cash paid for	Contingent expenses.	51	0	0												
,,	,,	Do.	Garden establishment.	137	7	0						Cash in hand.....	...	...	...	174	11	2
							188	7	0									
,,	June.. ...	Do.	Contingent expenses.	43	4	0				1860.	May... ...	By Government allowance	100	0	0			
,,	,,	Do.	Garden establishment.	123	7	6				,,	,,	Do. Plants and seeds sold	110	4	0			
							166	11	6							210	4	0
,,	July... ...	Do.	Contingent expenses.	82	0	0				,,	June... ...	Do. Government allowance	100	0	0			
,,	,,	Do.	Garden establishment.	116	3	4				,,	,,	Do. Plants and seeds sold...	133	8	0			
							198	3	4							233	8	0
,,	August. ...	Do.	Contingent expenses.	18	4	0				,,	July... ...	Do. Government allowance	100	0	0			
,,	,,	Do.	Garden establishment.	160	0	8				,,	,,	Do. Plants and seeds sold	368	2	0			
							178	4	8							468	2	0
,,	September..	Do.	Contingent expenses.	1	4	0				,,	August. ...	Do. Government allowance	100	0	0			
,,	,,	Do.	Garden establishment.	269	4	8				,,	,,	Do. Plants and seeds sold...	128	8	0			
							270	8	8							228	8	0
,,	October. ...	Do.	Contingent expenses.	8	0	0				,,	September..	Do. Government allowance	100	0	0			
,,	,,	Do.	Garden establishment.	202	9	6				,,	,,	Do. Plants and seeds sold...	173	4	0			
							210	9	6							273	4	0
,,	November..	Do.	Contingent expenses.	66	10	0				,,	October. ...	Do. Government allowance	100	0	0			
,,	,,	Do.	Garden establishment.	162	14	3				,,	,,	Do. Plants and seeds sold	51	14	0			
							229	8	3							151	14	0
,,	December...	Do.	Garden establishment.	181	6	10				,,	November..	Do. Government allowance	100	0	0			
							181	6	10	,,	,,	Do. Plants and seeds sold..	199	7	0			
1861	January...	Do.	Contingent expenses.	36	6	8										299	7	0
,,	,,	Do.	Garden establishment.	165	14	11				,,	December. .	Do. Government allowance	100	0	0			
							202	5	7	,,	,,	Do. Plants and seeds sold	60	2	0			
,,	February...	Do.	Contingent expenses.	118	14	0										160	2	0
,,	,,	Do.	Garden establishment.	178	14	2				1861	January. ...	Do. Government allowance	100	0	0			
							297	12	2	,,	,,	Do. Plants and seeds sold...	110	6	0			
,,	March... ...	Do.	Contingent expenses.	45	12	0										210	6	0
,,	,,	Do.	Garden establishment.	198	1	6				,,	February...	Do. Government allowance	100	0	0			
							243	13	6	,,	,,	Do. Plants and seeds sold...	141	15	0			
1861	April... ...	Do.	Contingent expenses.	24	10	0												
,,	,,	Do.	Garden establishment.	202	14	4				,,	,,	Do. Pay of Apprentice and Writer for August and September 1860	70	0	0			
							227	8	4							311	15	0
										,,	March... ...	Do. Government allowance	100	0	0			
										,,	,,	Do. Plants and seeds sold...	75	4	0			
																175	4	0
			Rupees.....				2,595	3	4	,,	April...	Do. Government allowance... ...	100	0	0			
			Cash in hand.....				474	3	10	,,	,,	Do. Plants and seeds sold...	72	2	0	172	2	0
			Total Rupees.....				3,069	7	2							Total Rupees.....	3,069	7	2

GOVERNMENT GARDENS, OOTACAMUND,

16th September 1861.

(Signed) W. G. McIVOR,

Superintendent Botanical Gardens.

APPENDIX N.

Directions for the treatment of Teak seeds.

Select seed from the finest and largest trees in November or December when ripe, keep the seed dry till the first showers in April, prepare your seed-beds, soak the seed 48 hours in cold water, then place in a heap of rotten leaves for forty-eight hours more, then plant out in beds at two inches apart covered with half an inch of earth, the beds to be covered with a small quantity of straw to be watered morning and evening; the plants come up about the fifteenth day. In July when the heavy rains commence, the plants should be taken up carefully (the tap root should not be injured) and planted out in holes in loose soil 15 inches in depth and at 6 feet apart. Care should be taken not to plant them out except during the continuance of rain.

(Signed) H. R. MORGAN, Captain,
Officiating Conservator of Forests.

TABLE B.

Return of Plants, seeds, &c. distributed from the Horticultural Gardens at Ootacamund, for the official year ending the 30th April 1861.

Year and Months.		Fruit trees and shrubs.	Timber trees.	Shrubs and Flowers.	Parcels of seeds.	Value.			Total value.		
						Rs.	A.	P.	Rs.	A.	P.
1860	May...	...	1,291	131	44	334	4	0			
,,	June	...	11	63	34	200	14	0			
,,	July...	...	302	605	30	325	4	0			
,,	August...	42	498	755	24	470	4	0			
,,	September	1	481	403	21	395	2	0			
,,	October	153	2,996	170	19	469	4	4			
,,	November	...	...	169	16	118	3	0			
,,	December	...	...	73	15	96	9	0			
1861	January	...	1	204	10	83	6	0			
,,	February	...	5	33	6	94	8	0			
,,	March...	...	4	107	9	66	8	0			
,,	April	...	...	32	3	22	4	0			
	Total Distribution.....	196	5,589	2,745	231	2,676	6	4	2,676	6	4

Government Gardens, Ootacamund,
16th September 1861.

(Signed) W. G. McIVOR,
Superintendent, Botanical Gardens.

Revenue / 1862 / Oct.
Pds. of Gold &c. for / April.

No. 269.

Jacob the Offg.
Comptr. of Forests.

Dated 2d. Octr. /61.
Received 1st. March /62

No. 050.

Gratuities &c.
for Keepers for the
Year 1862. Bill

£1.894-25. 0 April /62

£ 3.18.-

Signature(s) Rim