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# MADRAS RECORD OFFICE

GOVERNMENT OF MADRAS

Revenue DEPARTMENT

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Not to be folded or roughly handled

No. 401. Read the following Proceedings of the Board of Revenue, dated 11th August 1876, No. 2,044, Forest No. 72 :—

Read the following letter from J. R. COCKERELL, Esq., Commissioner of the Nilgiris, to C. A. GALTON, Esq., Acting Secretary to the Board of Revenue, dated Ootacamund, 7th July 1876, No. 45.

I HAVE the honor to submit a letter from Colonel Beddome to the Government on the subject of the plantations of Australian trees on the Hills, which Colonel Beddome has sent through this office for my remarks.

2. Colonel Beddome states, "these plantations were originally formed by the Forest Department for the supply of fuel to the stations of Ooty, Wellington, and Coonoor. On their transfer from Imperial to Local Conservancy, this does not appear to have been kept in view, and they have been treated neither as fuel nor as high timber." "Another result of the transfer has been that one of the officers in charge (Major Murray) altered the planting of the Eucalyptus globulus from 6 by 6 to 9 by 9. The result has been very unfortunate as exemplified in the Old Forest Plantation at Wellington and the Norwood Plantation at Ootacamund."

3. Planting was commenced at Wellington in 1856. In 1869, the change from Imperial to Local Conservancy occurred and 191 acres of plantation were handed over. In 1875, a transfer was made and the Local Conservancy handed back 919 acres of plantation.

4. Colonel Beddome is not quite correct in stating that the Local Conservancy lost sight of the original object of the plantations. Mr. Robertson, the Superintendent of the Government Farm at Sydapet, in his report on the Nilgiris published in 1875, states "the Sholas" consist of crooked undersized indigenous trees of no value as timber and of small value as fuel. They are scarcely worthy of attention. Those that are likely to afford shelter from high winds and those that are situated near the large Hill Stations and are the favorite resorts of Hill Visitors should be preserved, but all others I think should be offered for sale. This would set free when cleared a large area of valuable land for growing Coffee, Tea, Cinchona, Australian trees, &c., while the appearance of the country could not but be improved". These views, as regards the superiority of plantation to shola, were the views which influenced the Jungle Conservancy. It was considered better to cut shola for fuel than to destroy immature plantation.

5. Another reason influenced the conservancy. In my report on Cinchona in No. 178, G.O., 19th September 1874, No. 1,193, Revenue Department, at paragraph 6, I stated that "on the Nilgiri Hills the greatest enemy to plantations is wind," and that if wind is let in by injudicious thinning the trees left standing are liable to die from want of adequate protection. It was this fear of letting in the wind that operated against thinning on a large scale in the Australian plantations. Captain C. Walker agreed with the Local Conservancy in thinking that great circumspection was needed in thinning before plantations were seven years old. Time will show whether these conclusions were wrong. I may remark that General Morgan, who had great experience

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in the management of Australian trees, did not thin out a private plantation which he possesses at Tudor Hall in Ootacamund. The Local Conservancy did thin but not sufficiently to give full room to the trees left. The conservancy may have been too cautious, but this was an error on the right side. Aramby, Newman's Plantations, and the plantation at Bleak House were all thinned.

6. The danger of letting in wind however is even admitted by Colonel Beddome, for he writes that the trees planted at 9 feet apart have grown up twisted owing to exposure.

7. With regard to the felling of shola near Ootacamund, I may remark that the sholas were selected after mature consideration and the felling of the Buthery Shola was undertaken with the express concurrence of Captain C. Walker, then Acting Conservator of Forests.

8. Colonel Beddome would treat the whole of the Ootacamund Plantations as coppice for fuel and most of the Coonoor Plantations. He thinks no demand is likely to arise for timber unless a railway is constructed on the ghaut. Upon this point Mr. Robertson remarks in his report: "At the present time a blue gum of ten years' growth will sell at from Rupees 2 to 3; and, if the area of land under tea, coffee, &c., continues to increase as at present, there seems every probability that this price will be maintained, while the matured wood of the blue gum would meet with a large sale in the plains if means could be devised for transporting it at a moderate cost. Many trees varying in age from fifteen to twenty-five years have been felled, and, judging from the quality of wood produced at this early age, there is every probability that the timber of mature trees will be highly valuable." Should, however, a rail not be constructed there will not necessarily be no demand for mature timber from Australian trees. Only last year, Mr. Beresford Anderson, Chief Engineer on the Madras line, wrote inquiring whether the conservancy could supply blue gum sleepers for the rail. The plantations were not old enough to meet the demand.

9. Colonel Beddome thinks that it would be time enough to plant when a railway was begun. I am not able to concur because of the long time required to bring Australian trees to maturity.

10. Colonel Beddome states that teak is so cheap on the Hills that it will always be preferred for building. I understand it costs 14 Annas per cubic foot to transport teak from Mudumalai to Ootacamund. The felling and squaring costs Annas 2 Pice 6 per cubic foot. But the supply from Mudumalai is waning. I believe I am right in saying that most of the first class teak trees have been cut out of the forest, and if this is the case, the forest must deteriorate every year, until the lapse of fifty years, when the teak plantations have come to maturity. It does not seem in these circumstances that any thing but good can result from leaving to grow the best of the Australian Plantations to a complete development. A good supply of timber is at present unattainable throughout the Presidency, and this it was that led to the organization of the Forest Department. On the Hills every facility is offered for the production of timber at a low cost and should be used.

11. The Acacia Melanoxylon is extensively infested with parasite, but healthy trees afford a very fine timber. The blue gum is perfectly healthy on the Hills. I would suggest that the healthy Melanoxylon and all the blue gum plantations be treated as high timber, the plantations of Wattle alone being coppiced. This is what was

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intended by the Jungle Conservancy, and shortly before the retransfer arrangements were made for cutting over Sheffield. I do not discern that the fact of some of the blue gum being twisted from too wide planting ought to interfere with the plantations being treated for high timber. The blue gum, even if distorted when young, grows straighter with a little care as it becomes stronger, and at all events as a tree is 80 feet high at ten years' old, the bole will afford a number of sleepers for which it is known there is a demand, and the timber if as good here as in its native country will come in for a great variety of other purposes.

ENCLOSURE No. 1.

From Lieut.-Colonel R. H. BEDDOME, Conservator of Forests, to the Honorable D. F. CARMICHAEL, Secretary to Government, Revenue Department, dated Ootacamund, 12th June 1876, No. 826.

I HAVE the honor to inform you that I have lately inspected all the Nilgiri Plantations and submit herewith my report upon the same.

2. OOTACAMUND PLANTATIONS—*Aramby Plantation, distance from Ootacamund 1½ miles.*—This is the oldest Government Eucalyptus Plantation at Ootacamund; it was planted in 1863, 1864, and 1865, and consists of about 38 acres, 30 of which was shola land and the rest grass; the plants were put down 6' by 6'; it is almost entirely Eucalyptus globulus, but there are a few trees of other species which however have not succeeded so well. If to be treated as a high timber plantation it must be considerably thinned out at once; if as a fuel plantation it should be entirely cut over before long or the trees will be getting too old to make good coppice growth.

This plantation has not been treated systematically as a high timber plantation should be; it has not been thinned nearly enough and not with any proper attention; the result is that many of the trees are not as straight as they should be, and they are of very unequal growth, many being 30 to 40 inches in circumference, whereas some are only 3 or 4 inches; about 504 are now standing to the acre and many splendid specimens. It should have been felled several years ago if intended for a fuel plantation.

3. *Governor's Shola Plantation, 5 miles from Ootacamund.*—This is about 80 acres: 70,000 Australian Acacias were put down in 1863 and the two or three following years, and 45,000 Eucalyptus globulus in 1870, 1871, and 1872; the growth is very fair. It should be treated as a fuel plantation and the Acacias cut over within the next two years.

4. *Snowdon Plantation, 2 miles from Ootacamund.*—About 7 acres planted with 9,000 Acacia Melanoxylon and dealbata; planted by the Collector about the year 1860 before the Forest Department took charge.

This should be at once felled for the firewood supply, and if the trees turn out too old to give good growth from the stool, it should be replanted. A few of the finest trees may be left for high timber.

5. *Marley Mund Plantation, 1½ miles from Ootacamund.*—About 9 acres planted with 7,000 Acacia Melanoxylon, a few Eucalyptus globulus; planted by the Collector some fifteen or sixteen years ago.

This should be felled at once for firewood, and, if too old to coppice well, should be replanted. A few of the finest trees may be left for high timber.

6. *The Sheffield Plantation, 3½ miles from Ootacamund.*—Fifteen acres planted with Acacia Melanoxylon and dealbata in trenches; planted by the Forest Department in 1862; the growth is not very good; it should be felled now to meet the firewood supply and allowed to grow again from coppice.

7. *Mudana Plantation, 3 miles from Ootacamund.*—Eight acres of Acacia planted with 8,000 trees about twelve or fifteen years ago. Should be felled for fuel.

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8. *Erooklands Plantation*,  $3\frac{1}{2}$  miles from Ootacamund, lately purchased by the Forest Department.—Ten acres planted about the year 1862 with 8,000 *Acacia Melanoxylon* and *dealbata*, the latter of which have been chiefly thinned out. Should be felled at once for fuel.

9. *Norwood Plantation*,  $1\frac{1}{2}$  miles from Ootacamund.—Twenty-six acres planted in 1872 and 1873, 9' by 9', with 14,000 *Eucalyptus globulus*; stems more or less crooked from being planted too far apart, but growth good for a fuel plantation. Will be ready to fell for fuel in 1878-79, when it should give at least 100 tons to the acre and produce again from the stools.

10. *Cally Plantation*,  $3\frac{1}{2}$  miles from Ootacamund.—Fourteen acres planted 6' by 6' in 1870 with *Eucalyptus globulus*; when two years old in 1872 it was burnt clean down by a fire which crept in from the grass land adjoining; it has however made splendid growth from the stool, and having been pruned down to one leader, no one without very close examination could detect that the trees were not the original seedlings; its growth was however thrown back some two years. It will be ready for cutting over in 1878 or 1879.

11. *Araikal Plantation*,  $5\frac{1}{2}$  miles from Ootacamund.—Eleven acres planted in 1873 with 6,000 *Eucalyptus globulus* at 9' by 9'; growing well.

12. *Andy Plantation*, 4 miles from Ootacamund.—Sixty acres planted in 1873 with *Eucalyptus globulus*; this plantation is in great part grass land, and is too exposed to the monsoon for *Eucalyptus* and has proved a failure. There are now only 5,000 *Eucalyptus globulus* established and these are growing very poorly; an attempt will be made to plant it with *Acacia dealbata*.

13. *Baikie Plantation*, 3 miles from Ootacamund.—Thirty-three acres planted in 1874 with 30,000 *Eucalyptus globulus* at 6' by 6'; growing well.

14. *Chowghat Cally*,  $3\frac{1}{2}$  miles from Ootacamund.—Thirty acres planted in 1871 with 32,000 *Eucalyptus globulus*, 6' by 6'; the upper part of the plantation is much exposed to the monsoon, and there are many failures; the lower part has grown very well.

15. *The Koolie Plantation*,  $1\frac{1}{2}$  miles from Ootacamund.—About 58 acres; it was intended to plant up the whole of this last year (1875), but the monsoon failed and planting had to be discontinued, and, although 63,000 pits were dug, only 23,000 plants were put out, and amongst these there have been 3,000 failures. It will be planted up this year with *Eucalyptus globulus* at 6' by 6'.

16. WELLINGTON PLANTATIONS.—*Black House Plantation*, about 2 miles from Wellington.—About 235 acres. One hundred and fifty acres of this was planted nearly twenty years ago chiefly with *Acacia Melanoxylon*; this must stand for high timber, but requires a good deal of thinning; there is some *Acacia dealbata* which has mostly been felled over for fuel, and it must regularly be cut over for this purpose on its attaining sufficient size. Seventy-five acres are young having been planted during the last few years, and are composed almost entirely of *Acacia dealbata* (the Wattle) and must be treated as a coppice fuel plantation.

17. *The Newman Plantation*, about 5 miles from Wellington.—Thirty-five acres, of which 25 were shola and 10 grass land; it was planted in 1870 and 1871 entirely with *Eucalyptus globulus* 6' by 6', and there are about 40,000 trees, and the growth is certainly splendid and beyond anything I have ever seen in any country.

This plantation must be treated as a high timber forest and be considerably thinned out.

18. *Rallea Plantation*, 4 or 5 miles from Wellington.—Sixty acres planted in 1872, 9' by 9', with *Eucalyptus globulus* and *Acacia Melanoxylon* alternately in broad strips.

The growth of the *Eucalyptus* is not straight, having been planted too far apart; this plantation may be treated as a coppice fuel plantation and felled over every five or six years.

19. *The Old Forest Plantation*, about three miles from Wellington.—Two hundred acres planted in 1872-73, 9' by 9', with *Eucalyptus globulus*; this is the best soil and aspect of any of the plantations, and would have been a magnificent plantation if it had been planted 6' by 6'; it

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was however planted 9' by 9' and the trees have consequently grown very crooked; the growth has been exceedingly rapid, the average height being 59½ feet and the average girth 17½ inches, and, although there are only 537 trees to the acre, the weight per acre (exclusive of tops and branches, which averaged 70 lbs. per tree) was computed at 39 tons per acre; if there was a sufficient demand for the wood, it might be treated at great profit as a coppice fuel plantation.

20. *Blackbridge Plantation*.—Forty-eight acres in the immediate vicinity of Wellington planted with *Eucalyptus globulus* two years ago; there have been many failures, and there are large gaps which are to be planted up this year.

21. *The Rock Plantation*, 2 miles from Wellington.—Eight acres planted in 1875 with *Eucalyptus globulus* 6' by 6'.

22. *Tippucachy*,  $2\frac{1}{2}$  or 3 miles from Wellington.—Thirty-five acres planted with *Eucalyptus globulus* 6' by 6'.

23. GENERAL REMARKS.—These plantations were originally formed by the Forest Department for the supply of fuel to the stations of Ootacamund, Wellington, and Coonoor; on their transfer from Imperial to Local Conservancy, this does not appear to have been kept in view, and they have been treated neither as "fuel" nor as "high timber"; the older ones, such as Governor's Shola, Sheffield, Madana, &c., have been left too long standing to give very favorable results from coppice, and they have not been thinned out or received the attention necessary for "high timber". Another result of the transfer has been that one of the officers in charge (Major Murray) altered the planting of the *Eucalyptus* from 6' by 6' to 9' by 9', probably to show a greater acreage planted; the result has been very unfortunate as exemplified in the Old Forest Plantation at Wellington and the Norwood Plantation at Ootacamund.

24. It will be seen that we now have at Ootacamund (excluding the 60 acres of the Andy Plantation which may be set down as a failure) 339 acres of *Eucalyptus* and *Acacia*, all planted up except a portion of the Koolie plantation, which will be planted this monsoon; much of this is now getting rather too old, I fear, for coppice and should have been felled during the last few years.

25. I would treat the whole of these Ootacamund Plantations as coppice for fuel, cutting them over every five, six, or seven years in rotation, leaving only a few thousand of the best trees here and there for high timber in case there should be any demand for the same. I do not anticipate more than a very small demand for timber of this class; teak is so very cheap up here that it will always, I think, be preferred; there is little or no building going on, and there are considerable private plantations of *Eucalyptus*, and every compound may be said to have a great many of these trees, most of which would come into the market if there ever was a demand.

26. The Commissioner does not quite agree with me in this; he thinks that the *Acacia* Plantations should be cut over at once, but that the *Eucalyptus* Plantations should be treated as timber plantations; it is very necessary that this should be definitely settled at once, as the plantations must receive very different treatment if intended for high timber, than if for coppice; the Aranky Plantation would be the best for this purpose at Ootacamund, but if it is to be so treated, it must be considerably thinned at once and gradually on during the next fifteen or twenty years. The Norwood *Eucalyptus* Plantation is, I think, of too crooked growth for high timber.

27. I found that several fine sholas in the immediate vicinity of Ootacamund had been cut down for fuel during the last two or three years when our older *Acacia* Plantations might have been felled at great profit, and this year felling has commenced in the Buthery Shola, a magnificent shola about a mile or a mile and a half behind Bishopdowns. I have now ordered the felling departmentally of some of our older *Acacia* Plantations for the fuel supply of the station, and when this can be properly organized, the felling of the rest of the Buthery Shola will be stopped.

28. The firewood supply of the station of Ootacamund from Government sources for the year 1875-76 was 1,832 tons, and to be on the safe side we may say we require to cut over annually from 25 to 30 acres of our plantations (Acacia and Eucalyptus).

I consider therefore that we have a sufficient area of plantations about Ootacamund for a permanent supply of fuel by felling in rotation, and I would not extend the plantations beyond planting up the remainder of the Koolie Plantation, the felled portion of the Buthery Shola and any other gaps; but if most of the Eucalyptus is to be reserved for building timber as proposed by the Commissioner, though the supply from thinnings in the plantations (to be treated as high timber) will be very considerable, we may yet require some addition to our plantations and be compelled to fell the rest of the Buthery Shola and perhaps even other sholas; but after we begin working our older Acacia Plantations time will soon show us if this is the case.

29. If a railroad were ever made up to the plateau the conditions would be utterly different, and immediately such is commenced planting should be largely extended wherever suitable sites are available within five or six miles of the line. The railway scheme was abandoned, I believe, because it was supposed there was not sufficient traffic, but was it ever taken into consideration how enormously the traffic would increase; we should probably send annually thousands of tons of timber down for locomotive fuel, sleepers, building timber, &c. The Eucalyptus globulus is certainly much inferior to teak for the interior fitting of houses, &c., but it is known to be a valuable building timber, and it is largely used in Australia for beams, joists, and rafters and in out-door work for piers, bridges, fence-rails, railway sleepers (duration about nine years), also for shafts and spokes of drays and a variety of other purposes.

30. The enormous yield per acre in the Eucalyptus Plantations on the plateau between 5,500 and 7,000 feet elevation is very astonishing. I calculate it at about 1,450 cubic feet per acre per annum for the first five or six years or in dry weight 25 tons per acre per annum (58 cubic feet to the ton); the Eucalyptus grows splendidly from coppice, and five or six years would appear to be about the best period for rotation, so that a permanent supply of about 25 tons per annum per acre may be calculated on.

I deputed Mr. Gass (trained Forest Assistant) to make very careful calculations in the "Newman" Plantations near Wellington, and the following was the result:—

It was found that 292 trees were standing on 10,800 square feet (the  $\frac{1}{4}$  acre); the measurements taken were as follows; average height deduced from six trees = 69 feet, average girth deduced from ten trees = 19 inches. Three trees were felled, respectively 28', 20', and 12' in girth; the first contained 13 $\frac{1}{2}$ , the second 7 $\frac{1}{2}$ , and the third 2 cubic feet (the upper part of the stem where less than 3" in diameter was not reckoned); this gives an average cubic content of 7 $\frac{1}{2}$  cubic feet, or multiplying by 292 and dividing by 58, — 38 tons to the  $\frac{1}{4}$  acre, = 152 tons per acre. The tops of the three felled trees together with the branches weighed 170, 100, and 80 lbs. (average 116 lbs. per tree); this however was not added in the calculation given above as the weight of the green wood gives a very erroneous result, the wood having been proved to lose about two-fifths of its weight in six months; the first tree felled, which was measured to be 13 $\frac{1}{2}$  cubic feet, was weighed and found to be 850 lbs., whereas its dry weight would only be about 500 lbs. (or between 38 and 39 lbs. per cubic foot).

In the plains we only calculate for 2 $\frac{1}{2}$  tons per acre per annum from Babool and other plantations, so that the rate of growth of the Eucalyptus up here may be said to be nine times as rapid as anything we can grow in the plains. Our fenced in fuel reserves of indigenous trees in the plains are as I have reported only yielding 1 ton per acre per annum, but they may be worked up to a much greater yield, and cannot, of course, in their present state be compared with regular plantations.

Note.—The indigenous sholas of the Nilgiris yield about 150 bandy-loads to the acre (say 65 tons); their growth is exceedingly slow; reproduction probably not less than 150 years; so that the annual yield is considerably under 1 ton per acre per annum.

31. Mr. Gass at my request also made careful measurements of some of the largest trees in the Aramby Plantation (now twelve or thirteen years old); fifteen trees were measured with the following results:—

|           | Circumference. | Height. |            | Circumference. | Height.  |
|-----------|----------------|---------|------------|----------------|----------|
| 1 ... ..  | 31"            | 86'     | 11 ... ..  | 36"            | 82'      |
| 2 ... ..  | 32"            | 93'     | 12 ... ..  | 38"            | 88'      |
| 3 ... ..  | 28"            | 81'     | 13 ... ..  | 51"            | 103'     |
| 4 ... ..  | 30"            | 82'     | 14 ... ..  | 39"            | 89'      |
| 5 ... ..  | 24"            | 74'     | 15 ... ..  | 42"            | 91'      |
| 6 ... ..  | 27'            | 78'     |            |                |          |
| 7 ... ..  | 26"            | 79'     |            | 15)517         | 15)1,281 |
| 8 ... ..  | 35"            | 94'     |            |                |          |
| 9 ... ..  | 40"            | 95'     | Average... | 34"            | 85'      |
| 10 ... .. | 38"            | 86'     |            |                |          |

Average cubical contents 23 cubic feet. The bole decreases to less than one foot in girth at about 14 or 15 feet from the top.

Although there are many trees in this plantation averaging 23 cubic feet, there are many that are mere spindles (the result of too little and injudicious thinning), and if now cut over the yield would not be more than 150 tons to the acre, the same as that calculated for the "Newman" Plantation at Wellington, which is only half its age; it is true that thinnings have been removed from time to time, but allowing for this it is clear that the best period for Eucalyptus as a coppice fuel plantation is about five to six years according to circumstances; the growth at Wellington is rather more rapid than at Ootacamund as they get less frost during the winter months, and the plantations can be cut over at five or even four years of age, but at Ootacamund six to seven years will probably be found the best period of rotation.

32. At Wellington there are 621 acres of Eucalyptus and Australian Acacias; there is no chance of there ever being a demand for even one quarter of this, unless we have a railway and unless Government are of opinion that we should plant in anticipation of a railway. I am of opinion that all further planting should be stopped for the present; the demand for firewood is very small, and is chiefly for the barracks, Coonoor being almost entirely supplied from private sources; it is at present met from cutting out the Acacia dealbata in the Bleak House Plantation. If a railway come up we should, as we now stand, have a very large supply available at once, and if we extended our planting simultaneously with the sanction for a railway we might have a fine growth coming on before it was opened.

33. The "Newman" Plantation should certainly be treated as a high timber plantation; the old Forest Plantation is of very crooked growth, the seedlings having been planted originally too far apart; it is fit for nothing but fuel which is much to be regretted as it is a very large plantation (200 acres), and I see little chance of there being a demand for the fuel it will yield.

34. The seigniorage on firewood on the plateau of the Nilgiris was formerly only 4 Annas the bandy-load; when Government raised the firewood seigniorage throughout the Presidency to one Rupee per 1,000 lbs., it was raised to one Rupee per bandy-load, but when Government lately ordered that this should only apply to railway fuel and that other fuel should only carry a seigniorage of 6 Annas per 1,000 lbs., no alteration was made on the Nilgiris, and subsequently Major Murray, the officer in charge, raised the seigniorage to Rupees 1-4-0 per bandy-load, but I cannot find that this was sanctioned by the Board of Revenue or the Government; this all occurred whilst the forests were under "Local Conservancy;" the question however hardly calls for consideration now as felling in the indigenous woods is to cease; our plantation wood will be felled by departmental agency, and sold on the spot at a fixed price (according to the distance of the plantation from the market), which, together with all the details, can be settled by the Deputy Conservator in communication with the Commissioner.

35. Charcoal is charged at a seigniorage of 4 Annas per head-load (say 50 to 70 lbs.), a very high charge with reference to the rest of the Presidency. A wretched article is turned out

\* Probably the largest tree in the plantation contains 53 cubic feet.

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36. I submit herewith a rough sketch map for reference showing the position of the plantations around Ootacamund; this is not intended for publication.

FORWARDED to the Board of Revenue, through the Commissioner of the Nilgiris, with reference to Rule VIII published with G.O., No. 1,662-A, of 19th November 1875, Revenue Department.

(Signed) R. H. BEDDOME, Lieut.-Colonel,  
Conservator of Forests.

From H. A. GASS, Esq., Deputy Conservator of Forests, to Major R. S. JAGO, Deputy Conservator of Forests, Nilgiris, dated Ootacamund, 19th May 1876.

2. Daily-passes are issued to the natives for firewood-cutting at the rates of 1 Anna per head-load, 3 Annas per bullock-load, and Rupees 1-4-0 per bandy-load; and a certain portion of the shola is marked off by flags within which the natives are permitted to fell any tree they please.

4. The process of making charcoal is as follows: A spot, close to a supply of water, is selected within the flagged area, and the ground is slightly hollowed out. In and around this hollow are placed dry branches and on top the wood, cloven into thin strips, is loosely thrown. The branches are set fire to, and, as the wood on top burns away, fresh wood is added from a heap close by. When after four or five hours the fire has burned down, a mixture of ashes, earth, and water is thrown on the red embers to extinguish them thoroughly and the charcoal is finished.

6. On Monday last Mr. Newman weighed the wood used for making a head-load of charcoal, and found it to be 460 lbs, and on the charcoal being made he weighed that also and

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In commenting upon this method, I can only say that to my mind it represents an expenditure of wood with a most indifferent result; the substance produced after the wood should hardly be called charcoal, but rather the ashes of a bonfire of large logs made of a well-dried and most excellent material. Scientifically speaking, charcoal is made by the almost total exclusion of air from burning wood whereby the volatile matters—namely, of oxygen and hydrogen—are thrown off and the mineral portion of the material is left with the carbon. But by the process under discussion, the wood, thrown loosely in a set fire to with no covering to exclude the air and regulate the rapidity with which it burns, must necessarily resolve itself into a most inferior charcoal composed of small chips and shavings, which has the advantage of rapidity which, of course, recommends it to the native, to whom the turn is all important. But I could, were they willing to learn, teach them a method by which they could eventually realise a return of at least 20 per cent. instead of 16 per cent. as at present.

but besides the difficulty of instilling these advantages in the minds of the Natives, the further difficulty, that there is not a market here for the quantity of charcoal which is produced; charcoal in small pieces sells, and charcoal in large pieces and of a better quality would not command a higher price or sell in larger quantities. In proof of this I was told that the burners could never dispose of one head-load to one individual, the quantity being too great for one person to use, and that several smaller loads, selling it thus to several persons, would be very trifling, but until there are a few factories or a railway in the neighbourhood, I think the advantage of teaching an improved method questionable.

(Signed) R. S. JAGO, Major,  
Dy. Conservator of Forests.

(Signed) R. H. BEDDOME, Lieut.-Colonel,  
Conservator of Forests.

ENCLOSURE No. 2. — Rough Sketch.

After noticing the condition of each plantation in order and pointing out errors of management which have occurred during the time the plantations have been under the charge of the Revenue Department, Colonel Beddome states the conclusions at which he has arrived with respect to the treatment to be pursued in the future and issues definite orders on the subject.

In the neighbourhood of Ootacamund there are 339 acres of Eucalyptus and which are calculated to be capable of yielding a permanent supply of fuel by rotation sufficient to meet the wants of the public, whilst in the neighbourhood of Por and Wellington the acreage of the plantations (621) is considerably in excess of local requirements. Colonel Beddome would treat the whole of the

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Ootacamund Plantations as coppice for fuel, reserving only a few of the best trees here and there for high timber, as he does not anticipate a demand to any extent for timber of this class. He would discontinue the felling of sholas and considers any extension of planting operations unnecessary at present, and would not take any further steps in this direction, unless it is decided to construct a railway up to the plateau. As regards the Wellington Plantations he would treat the "Newman" Plantation as high timber and the rest as fuel plantations, stopping all further planting. The Commissioner does not concur in these conclusions; he explains the reasons which led to the adoption of a different treatment to that advocated by the Conservator, and dissents from the opinion expressed by Colonel Beddome that there is no probability of a demand for timber unless a railway is constructed. He recommends that the best plantations of *Acacia Melanoxylon* and *Eucalyptus* be treated as high timber, the plantations of *Wattle* alone being coppiced. In this case the requirements of the public as regards fuel supply on the Ootacamund side must be met by extended planting or felling sholas.

4. The Board think that Colonel Beddome is mistaken in supposing that the larger timber is not likely to find a sale unless a railway is constructed, and in recommending the discontinuance of planting operations and the cutting for fuel of almost all the existing plantations. They however consider that he is right in deprecating the further clearance of indigenous sholas. It is clear from his report that there is sufficient provision for the present requirements of the stations as regards fuel, if a portion only of the plantations is devoted to that purpose, and steps can be taken to keep up the supply to Ootacamund by further planting. So long as the wants of the community can be provided by cutting the plantations, the Board think the sholas should, as a rule, be spared. They are not too numerous; they generally protect the heads of streams, and they do not reproduce themselves as rapidly as plantations of Australian trees.

5. As a general rule, all plantations containing promising trees should be kept for high timber, or at all events the best trees should be reserved. More especially should all plantations of trees which will grow into good sleepers be kept for timber, and planting operations should be steadily maintained in all favorable localities. The cost of upkeep is small, and it is impossible to foresee what will be the value of the wood hereafter. The Board believe that Colonel Beddome has underrated the prospective demand. His remarks seem to have been made principally with reference to the demand for timber for building purposes, but wood is required for other purposes. The Board believe that all the boxes used for packing tea on the Hills are at present procured from the low country, and, if Australian gum trees are not suitable for that purpose, it may be possible to introduce some species of wood that will be suitable. Endeavors should be made to acclimatize all the more valuable trees of temperate countries; the Australian trees grow with such wonderful rapidity that it is not too much to expect that similar success might be attained with some other species.

6. The seigniorage on wood is heavy and seems to have been raised without authority; the rate should have been reduced to 6 Annas per 1,000 lbs. on receipt of G.O., dated 31st October 1873, No. 1,225, but if felling is confined to the plantations in future the levy of seigniorage will cease. The rate charged for charcoal seems excessive, but the Board presume that, under the Conservator's present proposals, the

*Proceedings of the Madras Government, Revenue Department,  
23rd November 1876.*

charcoal-burners will have to purchase wood from the Forest Department for conversion into charcoal. Should however felling continue the rates of seigniorage on wood and charcoal should be revised.

(True Copies and Extract.)

(Signed)

C. A. GALTON,

Acting Secretary.

No. 402.

ORDER THEREON, 23rd November 1876, No. 1,763.

Forests, No. 14.

BEFORE coming to a final decision regarding the Nilgiri Plantations, His Grace the Governor in Council resolves

to direct the Conservator to submit a statement showing the total expenditure in these plantations whether incurred under local or imperial management. The statement should embrace expenditure of every description, and rent of land.

(True Extract.)

(Signed)

D. F. CARMICHAEL,

Secretary to Government.

To the Board of Revenue.  
" the Conservator of Forests.

Exd. W. J. Lewis.

FOREST No. 72.

PROCEEDINGS OF THE BOARD OF REVENUE, dated 11th August 1876, No. 2,044.  
Read the following letter from J. R. COCKERELL, Esq., Commissioner of the Nilgiris,  
to C. A. GALTON, Esq., Acting Secretary to the Board of Revenue, dated  
Ootacamund, 7th July 1876, No. 45:—

I HAVE the honor to submit a letter from Colonel Beddome to the Government on  
the subject of the plantations of Australian trees on the Hills, which Colonel Beddome  
has sent through this office for my remarks.

2. Colonel Beddome states "these plantations were originally formed by the  
Forest Department for the supply of fuel to the stations of Ooty, Wellington, and  
Coonoor. On their transfer from Imperial to Local Conservancy, this does not appear  
to have been kept in view, and they have been treated neither as fuel nor as high  
timber." "Another result of the transfer has been that one of the officers in charge  
(Major Murray) altered the planting of the Eucalyptus globulus from 6 by 6 to 9 by 9.  
The result has been very unfortunate as exemplified in the Old Forest Plantation at  
Wellington and the Norwood Plantation at Ootacamund."

3. Planting was commenced at Wellington in 1856. In 1869, the change from  
Imperial to Local Conservancy occurred and 191 acres of plantation were handed over.  
In 1875, a transfer was made and the Local Conservancy handed back 919 acres of  
plantation.

4. Colonel Beddome is not quite correct in stating that the Local Conservancy  
lost sight of the original object of the plantations. Mr. Robertson, the Superintendent  
of the Government Farm at Sydapet, in his report on the Nilgiris published in 1875,  
states "the Sholas" consist of crooked undersized indigenous trees of no value as timber  
and of small value as fuel. They are scarcely worthy of attention. Those that are  
likely to afford shelter from high winds and those that are situated near the large Hill  
Stations and are the favorite resorts of Hill Visitors should be preserved, but all others  
I think should be offered for sale. This would set free when cleared a large area of  
valuable land for growing Coffee, Tea, Cinchona Australian trees, &c., while the  
appearance of the country could not but be improved." These views, as regards the  
superiority of plantation to shola, were the views which influenced the Jungle Conser-  
vancy. It was considered better to cut shola for fuel than to destroy immature  
plantation.

5. Another reason influenced the conservancy. In my report on Cinchona in  
No. 178, G.O., 19th September 1874, No. 1,193, Revenue Department, at paragraph 6,  
I stated that "on the Nilgiri Hills the greatest enemy to plantations is wind," and  
that if wind is let in by injudicious thinning the trees left standing are liable to die  
from want of adequate protection. It was this fear of letting in the wind that operated  
against thinning on a large scale in the Australian plantations. Captain C. Walker  
agreed with the Local Conservancy in thinking that great circumspection was needed  
in thinning before plantations were seven years old. Time will show whether these  
conclusions were wrong. I may remark that General Morgan, who had great experience

in the management of Australian trees, did not thin out a private plantation which he possesses at Tudor Hall in Ootacamund. The Local Conservancy did thin but not sufficiently to give full room to the trees left. The conservancy may have been too cautious, but this was an error on the right side. Aramby, Newman's Plantations, and the plantation at Bleak House were all thinned.

6. The danger of letting in wind however is even admitted by Colonel Beddome, for he writes that the trees planted at 9 feet apart have grown up twisted owing to exposure.

7. With regard to the felling of shola near Ootacamund, I may remark that the sholas were selected after mature consideration and the felling of the Butchery Shola was undertaken with the express concurrence of Captain C. Walker, then Acting Conservator of Forests.

8. Colonel Beddome would treat the whole of the Ootacamund Plantations as coppice for fuel and most of the Coonoor Plantations. He thinks no demand is likely to arise for timber unless a railway is constructed on the ghaut. Upon this point Mr. Robertson remarks in his report: "At the present time a blue gum of ten years' growth will sell at from Rupees 2 to 3; and, if the area of land under tea, coffee, &c., continues to increase as at present, there seems every probability that this price will be maintained, while the matured wood of the blue gum would meet with a large sale in the plains if means could be devised for transporting it at a moderate cost. Many trees varying in age from fifteen to twenty-five years have been felled, and, judging from the quality of wood produced at this early age, there is every probability that the timber of mature trees will be highly valuable." Should, however, a rail not be constructed there will not necessarily be no demand for mature timber from Australian trees. Only last year, Mr. Beresford Anderson, Chief Engineer on the Madras line, wrote inquiring whether the conservancy could supply blue gum sleepers for the rail. The plantations were not old enough to meet the demand.

9. Colonel Beddome thinks that it would be time enough to plant when a railway was begun. I am not able to concur because of the long time required to bring Australian trees to maturity.

10. Colonel Beddome states that teak is so cheap on the Hills that it will always be preferred for building. I understand it costs 14 Annas per cubic foot to transport teak from Mudumalai to Ootacamund. The felling and squaring costs Annas 2 Pice 6 per cubic foot. But the supply from Mudumalai is waning. I believe I am right in saying that most of the first class teak trees have been cut out of the forest, and if this is the case, the forest must deteriorate every year until the lapse of fifty years, when the teak plantations have come to maturity. It does not seem in these circumstances that any thing but good can result from leaving to grow the best of the Australian Plantations to a complete developement. A good supply of timber is at present unattainable throughout the Presidency, and this it was that led to the organization of the Forest Department. On the Hills every facility is offered for the production of timber at a low cost and should be used.

11. The Acacia Melanoxylon is extensively infested with parasite, but healthy trees afford a very fine timber. The blue gum is perfectly healthy on the Hills. I would suggest that the healthy Melanoxylon and all the blue gum plantations be treated as high timber, the plantations of Wattle alone being coppiced. This is what was

intended by the Jungle Conservancy, and shortly before the retransfer arrangements were made for cutting over Sheffield. I do not discern that the fact of some of the blue gum being twisted from too wide planting ought to interfere with the plantations being treated for high timber. The blue gum, even if distorted when young, grows straighter with a little care as it becomes stronger, and at all events as a tree is 80 feet high at ten years' old, the bole will afford a number of sleepers for which it is known there is a demand, and the timber if as good here as in its native country will come in for a great variety of other purposes.

ENCLOSURE No. 1.

From Lieut.-Colonel R. H. BEDDOME, Conservator of Forests, to the Honorable D. F. CARMICHAEL, Secretary to Government, Revenue Department, dated Ootacamund, 12th June 1876, No. 826.

I HAVE the honor to inform you that I have lately inspected all the Nilgiri Plantations and submit herewith my report upon the same.

2. OOTACAMUND PLANTATIONS—*Aramby Plantation*, distance from Ootacamund  $1\frac{1}{2}$  miles.—This is the oldest Government Eucalyptus Plantation at Ootacamund; it was planted in 1863, 1864, and 1865, and consists of about 38 acres, 30 of which was shola land and the rest grass; the plants were put down 6' by 6'; it is almost entirely Eucalyptus globulus, but there are a few trees of other species which however have not succeeded so well. If to be treated as a high timber plantation it must be considerably thinned out at once; if as a fuel plantation it should be entirely cut over before long or the trees will be getting too old to make good coppice growth.

This plantation has not been treated systematically as a high timber plantation should be; it has not been thinned nearly enough and not with any proper attention; the result is that many of the trees are not as straight as they should be, and they are of very unequal growth, many being 30 to 40 inches in circumference, whereas some are only 3 or 4 inches; about 504 are now standing to the acre and many splendid specimens. It should have been felled several years ago if intended for a fuel plantation.

3. *Governor's Shola Plantation*, 5 miles from Ootacamund.—This is about 80 acres. 70,000 Australian Acacias were put down in 1863 and the two or three following years, and 45,000 Eucalyptus globulus in 1870, 1871, and 1872; the growth is very fair. It should be treated as a fuel plantation and the Acacias cut over within the next two years.

4. *Snordon Plantation*, 2 miles from Ootacamund.—About 7 acres planted with 9,000 Acacia Melanoxylon and dealbata; planted by the Collector about the year 1860 before the Forest Department took charge.

This should be at once felled for the firewood supply, and if the trees turn out too old to give good growth from the stool, it should be replanted. A few of the finest trees may be left for high timber.

5. *Marley Mund Plantation*,  $1\frac{1}{2}$  miles from Ootacamund.—About 9 acres planted with 7,000 Acacia Melanoxylon, a few Eucalyptus globulus; planted by the Collector some fifteen or sixteen years ago.

This should be felled at once for firewood, and, if too old to coppice well, should be replanted. A few of the finest trees may be left for high timber.

6. *The Sheffield Plantation*,  $3\frac{1}{2}$  miles from Ootacamund.—Fifteen acres planted with Acacia Melanoxylon and dealbata in trenches; planted by the Forest Department in 1862; the growth is not very good; it should be felled now to meet the firewood supply and allowed to grow again from coppice.

7. *Madana Plantation*, 3 miles from Ootacamund.—Eight acres of Acacia planted with 8,000 trees about twelve or fifteen years ago. Should be felled for fuel.

8. *Brooklands Plantation*,  $3\frac{1}{2}$  miles from Ootacamund, lately purchased by the Forest Department.—Ten acres planted about the year 1862 with 8,000 *Acacia Melanoxylon* and *dealbata*, the latter of which have been chiefly thinned out. Should be felled at once for fuel.

9. *Norwood Plantation*,  $1\frac{1}{2}$  miles from Ootacamund.—Twenty-six acres planted in 1872 and 1873, 9' by 9', with 14,000 *Eucalyptus globulus*; stems more or less crooked from being planted too far apart, but growth good for a fuel plantation. Will be ready to fell for fuel in 1878-79, when it should give at least 100 tons to the acre and produce again from the stools.

10. *Oally Plantation*,  $3\frac{1}{2}$  miles from Ootacamund.—Fourteen acres planted 6' by 6' in 1870 with *Eucalyptus globulus*; when two years old in 1872 it was burnt clean down by a fire which crept in from the grass land adjoining; it has however made splendid growth from the stool, and having been pruned down to one leader, no one without very close examination could detect that the trees were not the original seedlings; its growth was however thrown back some two years. It will be ready for cutting over in 1878 or 1879.

11. *Arnikal Plantation*,  $5\frac{1}{2}$  miles from Ootacamund.—Eleven acres planted in 1873 with 6,000 *Eucalyptus globulus* at 9' by 9'; growing well.

12. *Andy Plantation*, 4 miles from Ootacamund.—Sixty acres planted in 1873 with *Eucalyptus globulus*; this plantation is in great part grass land, and is too exposed to the monsoon for *Eucalyptus* and has proved a failure. There are now only 5,000 *Eucalyptus globulus* established and these are growing very poorly; an attempt will be made to plant it with *Acacia dealbata*.

13. *Bulkie Plantation*, 3 miles from Ootacamund.—Thirty-three acres planted in 1874 with 39,000 *Eucalyptus globulus* at 6' by 6'; growing well.

14. *Choughat Cally*,  $3\frac{1}{2}$  miles from Ootacamund.—Thirty acres planted in 1871 with 32,000 *Eucalyptus globulus*, 6' by 6'; the upper part of the plantation is much exposed to the monsoon, and there are many failures; the lower part has grown very well.

15. *The Koolie Plantation*,  $1\frac{1}{2}$  miles from Ootacamund.—About 58 acres; it was intended to plant up the whole of this last year (1875), but the monsoon failed and planting had to be discontinued, and, although 63,000 pits were dug, only 23,000 plants were put out, and amongst these there have been 3,000 failures. It will be planted up this year with *Eucalyptus globulus* at 6' by 6'.

16. WELLINGTON PLANTATIONS.—*Black House Plantation*, about 2 miles from Wellington.—About 235 acres. One hundred and fifty acres of this was planted nearly twenty years ago chiefly with *Acacia Melanoxylon*; this must stand for high timber, but requires a good deal of thinning; there is some *Acacia dealbata* which has mostly been felled over for fuel, and it must regularly be cut over for this purpose on its attaining sufficient size. Seventy-five acres are young having been planted during the last few years, and are composed almost entirely of *Acacia dealbata* (the Wattle) and must be treated as a coppice fuel plantation.

17. *The Newman Plantation*, about 5 miles from Wellington.—Thirty-five acres, of which 25 were shola and 10 grass land; it was planted in 1870 and 1871 entirely with *Eucalyptus globulus* 6' by 6', and there are about 40,000 trees, and the growth is certainly splendid and beyond anything I have ever seen in any country.

This plantation must be treated as a high timber forest and be considerably thinned out.

18. *Rallea Plantation*, 4 or 5 miles from Wellington.—Sixty acres planted in 1872, 9' by 9', with *Eucalyptus globulus* and *Acacia Melanoxylon* alternately in broad strips.

The growth of the *Eucalyptus* is not straight, having been planted too far apart; this plantation may be treated as a coppice fuel plantation and felled over every five or six years.

19. *The Old Forest Plantation*, about three miles from Wellington.—Two hundred acres planted in 1872-73, 9' by 9', with *Eucalyptus globulus*; this is the best soil and aspect of any of the plantations, and would have been a magnificent plantation if it had been planted 6' by 6'; it

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was however planted 9' by 9' and the trees have consequently grown very crooked; the growth has been exceedingly rapid, the average height being 59½ feet and the average girth 17½ inches, and, although there are only 537 trees to the acre, the weight per acre (exclusive of tops and branches, which averaged 70 lbs. per tree) was computed at 39 tons per acre; if there was a sufficient demand for the wood, it might be treated at great profit as a coppice fuel plantation.

20. *Blackbridge Plantation*.—Forty-eight acres in the immediate vicinity of Wellington planted with *Eucalyptus globulus* two years ago; there have been many failures, and there are large gaps which are to be planted up this year.

21. *The Rock Plantation*, 2 miles from Wellington.—Eight acres planted in 1875 with *Eucalyptus globulus* 6' by 6'.

22. *Tippucachy*,  $2\frac{1}{2}$  or 3 miles from Wellington.—Thirty-five acres planted with *Eucalyptus globulus* 6' by 6'.

23. GENERAL REMARKS.—These plantations were originally formed by the Forest Department for the supply of fuel to the stations of Ootacamund, Wellington, and Coonoor; on their transfer from Imperial to Local Conservancy, this does not appear to have been kept in view, and they have been treated neither as "fuel" nor as "high timber"; the older ones, such as Governor's Shola, Sheffield, Madana, &c., have been left too long standing to give very favorable results from coppice, and they have not been thinned out or received the attention necessary for "high timber". Another result of the transfer has been that one of the officers in charge (Major Murray) altered the planting of the *Eucalyptus* from 6' by 6' to 9' by 9', probably to show a greater acreage planted; the result has been very unfortunate as exemplified in the Old Forest Plantation at Wellington and the Norwood Plantation at Ootacamund.

24. It will be seen that we now have at Ootacamund (excluding the 60 acres of the Andy Plantation which may be set down as a failure) 339 acres of *Eucalyptus* and *Acacia*, all planted up except a portion of the Koolie plantation, which will be planted this monsoon; much of this is now getting rather too old, I fear, for coppice and should have been felled during the last few years.

25. I would treat the whole of these Ootacamund Plantations as coppice for fuel, cutting them over every five, six, or seven years in rotation, leaving only a few thousand of the best trees here and there for high timber in case there should be any demand for the same. I do not anticipate more than a very small demand for timber of this class; tenk is so very cheap up here that it will always, I think, be preferred; there is little or no building going on, and there are considerable private plantations of *Eucalyptus*, and every compound may be said to have a great many of these trees, most of which would come into the market if there ever was a demand.

26. The Commissioner does not quite agree with me in this; he thinks that the *Acacia* Plantations should be cut over at once, but that the *Eucalyptus* Plantations should be treated as timber plantations; it is very necessary that this should be definitely settled at once, as the plantations must receive very different treatment if intended for high timber than if for coppice; the Aramby Plantation would be the best for this purpose at Ootacamund, but if it is to be so treated, it must be considerably thinned at once and gradually on during the next fifteen or twenty years. The Norwood *Eucalyptus* Plantation is, I think, of too crooked growth for high timber.

27. I found that several fine sholas in the immediate vicinity of Ootacamund had been cut down for fuel during the last two or three years when our older *Acacia* Plantations might have been felled at great profit, and this year felling has commenced in the Buthery Shola, a magnificent shola about a mile or a mile and a half behind Bishopsdowns. I have now ordered the felling departmentally of some of our older *Acacia* Plantations for the fuel supply of the station, and when this can be properly organized, the felling of the rest of the Buthery Shola will be stopped.

24. I have been thoroughly into the question and forward a report on it from Mr. Gass who has been scientifically trained in charcoal manufacture in Germany; at present it is however on such a very limited scale that I cannot advise any interference; we could not lessen the wastage or improve the article, unless we insisted on the Contractors clubbing together and making kilns on a larger scale, or unless we undertook the manufacture departmentally, to both of which plans there are objections.

36. I submit herewith a rough sketch map for reference showing the position of the plantations around Ootacamund; this is not intended for publication.

No. 827.

FORWARDED to the Board of Revenue, through the Commissioner of the Nilgiris, with reference to Rule VIII published with G.O., No. 1,662-A, of 19th November 1875, Revenue Department.

OOTACAMUND,  
12th June 1876.

(Signed) R. H. BEDDOME, Lieut.-Colonel,  
Conservator of Forests.

ENCLOSURE 1 in No. 1.

From H. A. GASS, Esq., Deputy Conservator of Forests, to Major R. S. Jago, Deputy Conservator of Forests, Nilgiris, dated Ootacamund, 19th May 1876.

WITH reference to your letter, No. 91, dated 29th April 1876, I have the honor to inform you that on Saturday, 13th May 1876, I visited the shola known as Buthery Shola, situated about two or three miles from Ootacamund. It is of large extent and devoted to the purposes of firewood cutting and charcoal burning.

2. Daily passes are issued to the natives for firewood cutting at the rates of 1 Anna per head-load, 3 Annas per bullock load, and Rupees 1-4-0 per bandy load; and a certain portion of the shola is marked off by flags within which the Natives are permitted to fell any tree they please.

3. For the right to prepare charcoal in the shola, daily passes are also issued at the Conservator's Office at the rate of 4 Annas per bag or head-load, and for this purpose also a portion of the shola is flagged off. The quantity of wood to be felled and the quantity of charcoal to be made during the day by each burner is unlimited; but he cannot carry away more than one head-load, supposed to be 50 lbs. but according to Mr. Newman's estimate really 70 or 80 lbs. in weight, each evening. Two Forest peons are continually present to prevent this quantity being exceeded.

4. The process of making charcoal is as follows: A spot, close to a supply of water, is selected within the flagged area and the ground is slightly hollowed out. In and around this hollow are placed dry branches and on top the wood, gloven into thin strips, is loosely thrown. The branches are set fire to, and, as the wood on top burns away, fresh wood is added from a heap close by. When after four or five hours the fire has burned down a mixture of ashes, earth, and water is thrown on the red embers to extinguish them thoroughly and the charcoal is finished.

5. One man and one woman are generally employed in the manufacture, and the trees chiefly used are Cinnamonum, Zeylanicum, and Michelia Nilagiriæ, the heart wood being best fitted for the purpose. But, with the exception of the Rhododendron, all kinds of timber may be employed. The bark, which is separated from the wood by the heat, makes the best charcoal, and that of the Cin: Zeylanicum is so far superior that the charcoal made from it sells at double price to the dhobies, who fill their hollow smoothing irons with it; and I was informed the Natives, if permitted to strip off the bark without felling the tree, would willingly pay 12 Annas signiorage for a day-pass.

6. On Monday last Mr. Newman weighed the wood used for making a head-load of charcoal and found it to be 460 lbs., and on the charcoal being made he weighed that also and found it to be 74 lbs. This head-load fetches about Rupees 1-4-0, and if we take the wages of the

man and woman to be 8 Annas and 4 Annas respectively, the signiorage being 4 Annas, a profit of 4 Annas per head-load is shown.

7. In commenting upon this method, I can only say that to my mind it represents an enormous expenditure of wood with a most indifferent result; the substance produced after consuming the wood should hardly be called charcoal, but rather the ashes of a bonfire of large dimensions made of a well dried and most excellent material. Scientifically speaking, charcoal is formed by the almost total exclusion of air from burning wood whereby the volatile matters—compounds of oxygen and hydrogen—are thrown off and the mineral portion of the material together with the carbon left. But by the process under discussion, the wood, thrown loosely in a heap and set fire to with no covering to exclude the air and regulate the rapidity with which the wood chars, must necessarily resolve itself into a most inferior charcoal composed of small pieces. It has the advantage of rapidity which, of course, recommends it to the Native, to whom a quick return is all important. But I could, were they willing to learn, teach them a method whereby they could eventually realize a return of at least 20 per cent. instead of 16 per cent. as at present. They should however be made to understand the politics—economical principles of combination and abstinence. The burners should place the wood in a common heap, which would take from seven to fourteen days to consume and produce charcoal in large lumps.

8. But besides the difficulty of instilling these advantages in the minds of the Natives, there is the further difficulty, that there is not a market here for the quantity of charcoal which would be produced; charcoal in small pieces sells, and charcoal in large pieces and of a better quality would not command a higher price or sell in larger quantities. In proof of this I was informed that the burners could never dispose of one head-load to one individual, the quantity being too great, but always separate it into several smaller loads, selling it thus to several persons. The outlay in implements would be very trifling, but until there are a few factories or a railway in the neighbourhood, I think the advantage of teaching an improved method questionable.

(True Copy.)

(Signed)

R. S. JAGO, Major,  
Dy. Conservator of Forests.

(True Copy.)

(Signed)

R. H. BEDDOME, Lieut.-Colonel,  
Conservator of Forests.

ENCLOSURE No. 2.—Rough Sketch.

WITH the foregoing letter, the Commissioner forwards Colonel Beddome's Inspection Report on the Nilgiri Plantations, which will be submitted for the orders of Government.

2. After noticing the condition of each plantation in order and pointing out errors of management which have occurred during the time the plantations have been under the charge of the Revenue Department, Colonel Beddome states the conclusions at which he has arrived with respect to the treatment to be pursued in the future and requests definite orders on the subject.

3. In the neighbourhood of Ootacamund there are 339 acres of Eucalyptus and Acacia, which are calculated to be capable of yielding a permanent supply of fuel by felling in rotation sufficient to meet the wants of the public, whilst in the neighbourhood of Coonoor and Wellington the acreage of the plantations (621) is considerably in excess of local requirements. Colonel Beddome would treat the whole of the

Ootacamund Plantations as coppice for fuel, reserving only a few of the best trees here and there for high timber, as he does not anticipate a demand to any extent for timber of this class. He would discontinue the felling of sholas and considers any extension of planting operations unnecessary at present, and would not take any further steps in this direction, unless it is decided to construct a railway up to the plateau. As regards the Wellington Plantations he would treat the "Newman" Plantation as high timber and the rest as fuel plantations, stopping all further planting. The Commissioner does not concur in these conclusions; he explains the reasons which led to the adoption of a different treatment to that advocated by the Conservator, and dissents from the opinion expressed by Colonel Beddome that there is no probability of a demand for timber unless a railway is constructed. He recommends that the best plantations of *Acacia Melanoxylon* and *Eucalyptus* be treated as high timber, the plantations of *Wattle* alone being coppiced. In this case the requirements of the public as regards fuel supply on the Ootacamund side must be met by extended planting or felling sholas.

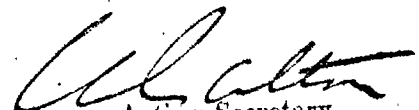
4. The Board think that Colonel Beddome is mistaken in supposing that the larger timber is not likely to find a sale unless a railway is constructed, and in recommending the discontinuance of planting operations and the cutting for fuel of almost all the existing plantations. They however consider that he is right in deprecating the further clearance of indigenous sholas. It is clear from his report that there is sufficient provision for the present requirements of the stations as regards fuel, if a portion only of the plantations is devoted to that purpose, and steps can be taken to keep up the supply to Ootacamund by further planting. So long as the wants of the community can be provided by cutting the plantations, the Board think the sholas should, as a rule, be spared. They are not too numerous; they generally protect the streams, and they do not reproduce themselves as Australian trees.

5. As a general rule, all plantations containing promising trees should be kept for high timber, or at all events the best trees should be reserved. More especially should all plantations of trees which will grow into good sleepers be kept for timber, and planting operations should be steadily maintained in all favorable localities. The cost of upkeep is small, and it is impossible to foresee what will be the value of the wood hereafter. The Board believe that Colonel Beddome has underrated the prospective demand. His remarks seem to have been made principally with reference to the demand for timber for building purposes, but wood is required for other purposes. The Board believe that all the boxes used for packing tea on the Hills are at present procured from the low country, and, if Australian gumtrees are not suitable for that purpose, it may be possible to introduce some species of wood that will be suitable. Endeavors should be made to acclimatize all the more valuable trees of temperate countries; the Australian trees grow with such wonderful rapidity that it is not too much to expect that similar success might be attained with some other species.

6. The seigniorage on wood is heavy and seems to have been raised without authority; the rate should have been reduced to 6 Annas per 1,000 lbs. on receipt of G.O., dated 31st October 1873, No. 1,225, but if felling is confined to the plantations in future the levy of seigniorage will cease. The rate charged for charcoal seems excessive, but the Board presume that, under the Conservator's present proposals, the

charcoal-burners will have to purchase wood from the Forest Department for conversion into charcoal. Should however felling continue the rates of seigniorage on wood and charcoal should be revised.

(True Copies and Extract.)

  
Acting Secretary.

To the Secretary to Government, Revenue Department,  
with a Sketch, to be returned.

Copy to the Commissioner of Nilgiris.  
" to the Conservator of Forests.

Exd. W. J. Lewis.

Concluded by 28-05  
3100-73-315-49  
17-00-74-17-75  
20-00-76-200-9

24.556 2.62  
Ans: 1876 2.62  
1876.

Board of Revenue,  
MADRAS.

PROCEEDINGS, 11TH AUGUST, 1876, No. 2,014.

Aug 25 Aug 176

End

Received

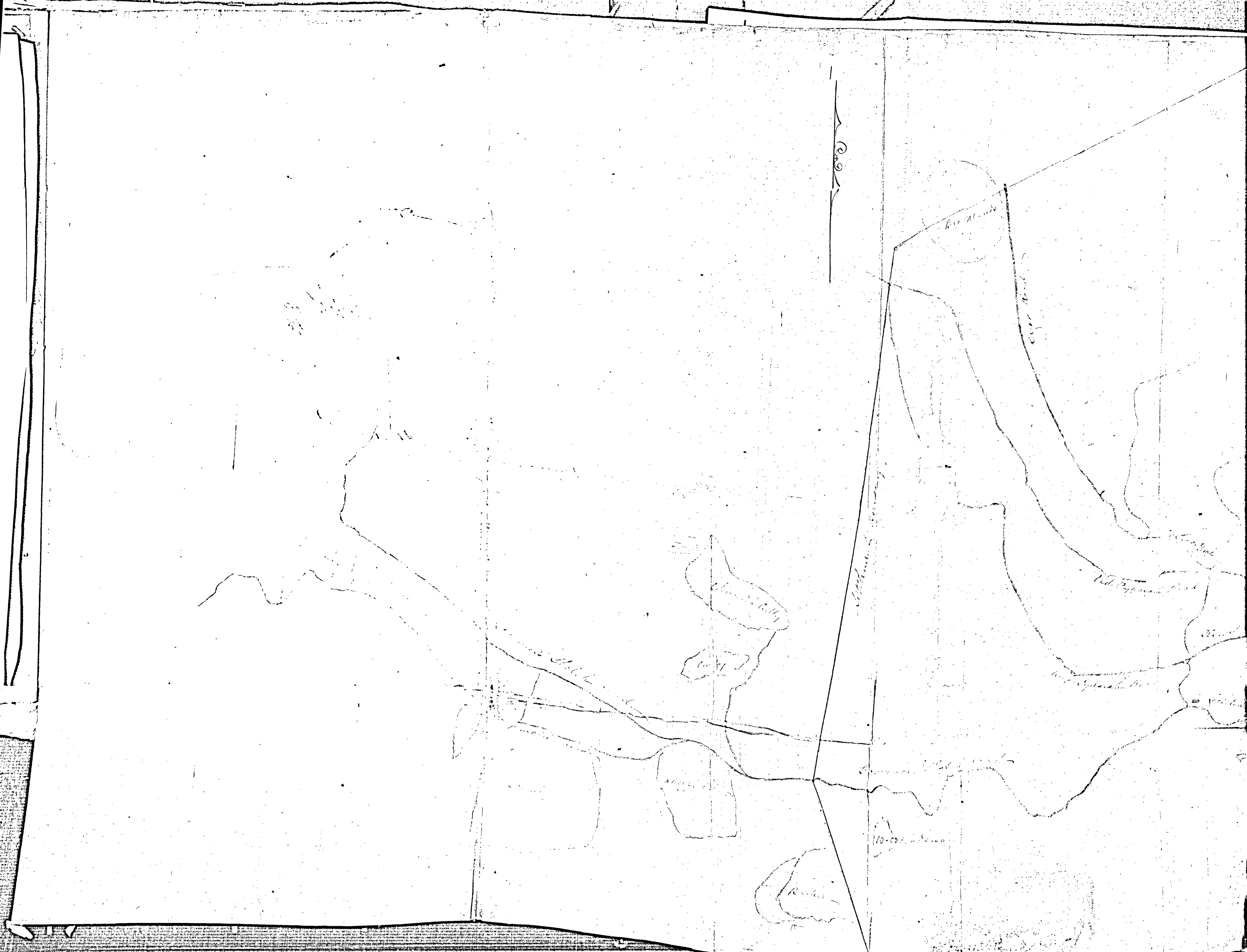
1st Sep.

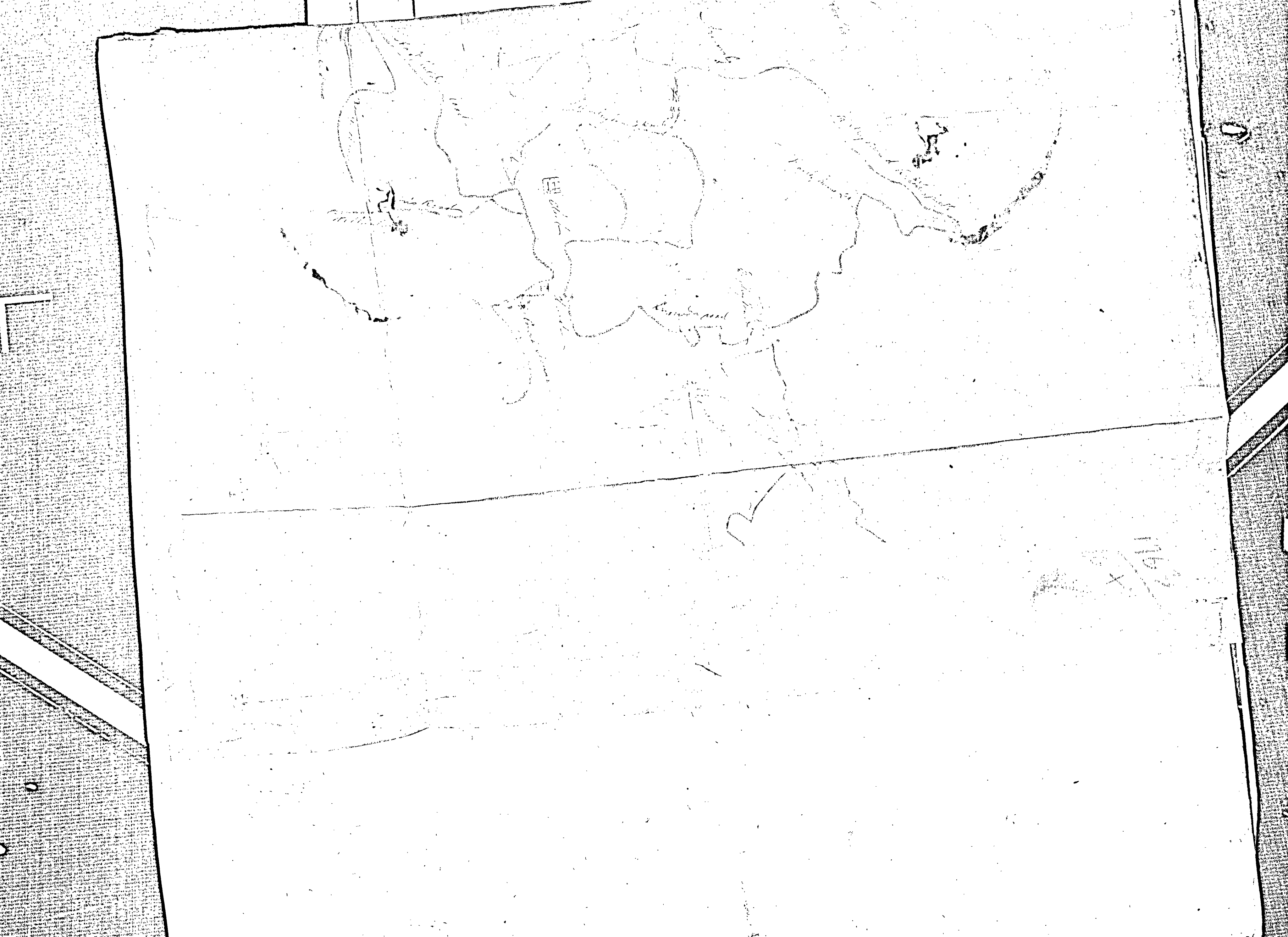
AUGUST.  
Forest No. 72.

*Virgin Plantations.*—Submitting for order  
Government, Inspection Report of (conserv  
of Forests on — with Commissioner's letter  
Board's views thereon.

For Order

Subd to Mr. Justice 13.04.1876  
2.1.1876 R. J. 2.014





No.

3576

From

Ans: H. P. R.

Dated

11. *Handwritten signature*

1876

FOR ORDERS.

I submit that this report is defective in as much as Colonel Reddon has failed to lay before Government the cost of these planting operations up to date. We want a Capital and Revenue account so far as it can be made up from the Commencement to enable a judgment to be formed of the worth of our enterprise and to be a guide for future operations. We only know that the retransfers of these operations to the Imperial Department in 1874

(4 or 23 Oct.) was  
recounted by the  
bankrupt condition of  
the undertaking, altho  
the supervision in some  
respects was unchanged.

If these enterprises have  
been cheaply conducted  
they may not be unprofitable.

It is to be expected that the  
results & prospects are  
not satisfactory to my  
mind. Col. Biddome

should be called on  
to supply this important  
defect without delay.

He should treat the  
expenditure whether

under local or Depart-  
mental arrangements

as one & the same and  
show every expenditure

rest of hand for or

I think this account

should be introduced

by Col. Biddome before

we come to a final  
decision. MM

On the whole I gather  
that Col. Biddome  
proposes to use the  
bulk of these plantations  
for firewood for which  
a moderate demand  
exists only in Port-au-Prince  
and is much unwilling to  
make a concession in  
order to force the  
market. He would put  
a stop to the use of the  
indigenous woodlands  
which are fit only for  
fuel. There is no

satisfactory prospect  
of a regular demand  
for high timber except  
with the aid of a railway  
which, I confess, is not  
likely to occupy the  
attention of the  
Govt. of St. Pierre for  
many years.

I prefer the proposal  
of the Board of Revenue  
to grow I would like  
the best plantations  
of the acacia Mimosoides  
Eucalyptus as high  
timber & reserve the  
white & after we have  
the account for the  
wood plantations to meet fuel demand.

regard to the local demand *for timber*  
 will be sufficiently met  
 by leaving a moderate  
 number of the largest  
 trees for timber purposes  
 when cutting the firewood,  
 as recommended in short  
 to assume the position  
 of monopolist (so far  
 as private competition  
 will permit) however  
 and vendor of firewood  
 to the visitors to the Hills.  
 with a reserve of timber  
 if a demand spring up.  
 I confess I do not like  
 the position nor do I  
 take the same cheerful view  
 of the future as the Board  
 of Revenue appear to do.

FOR ORDERS

by Col. Beddome.  
 But I would accept  
 Col. Beddome's proposal  
 to defer by ten years  
 plantation & instruct  
 him so far as he sees  
 prospect of profit  
 & improvement to proceed  
 with the same for where he  
 believes it to have been  
 inadequate - and  
 I would allow to select  
 one or two plantations to  
 be cut over & coffee &  
 for fuel & other - reporting  
 results for further orders  
 as soon as possible. The  
 homestead plantation must  
 be considered a part of the  
 Govt. House Park & be  
 treated accordingly.

I think that the  
 Commissioner justifies his  
 management so far as  
 it has gone therein.

1763 23 Nov/76  
 Order, 113596

Before coming to a  
 final decision regarding  
 the Nilgiris Plantation  
 we have thought it would  
 be better to direct the Commissioner  
 to submit to the Government  
 showing the total  
 expenditure on these  
 plantations whether  
 viewed under local  
 or imperial management

16

8-11-76

[illegible]

44