Revenue (1897) Department.

PRESS SERIES.

G.O., No. 329.

DATED 14th May 1897.

[Despatch Abstract.]

Inspection Report.

Recording, with a remark, Board's Proc^s reviewing the — of the Conservator of Forests, Southern Circle, on the forests of the Nilgiri district.

BACK PAPERS.

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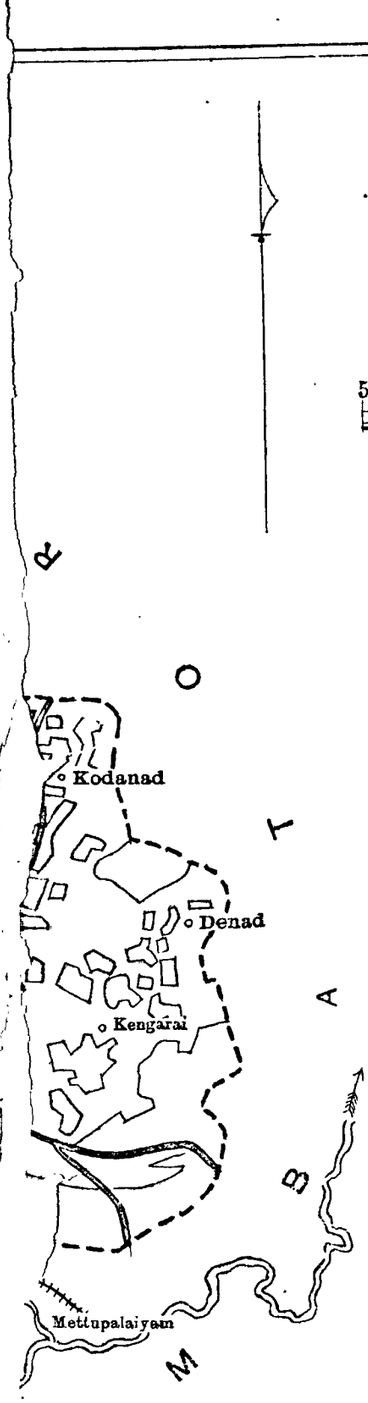
FURTHER PAPERS.

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MAP
of the
NILGIRI DISTRICT
Shewing Forest Reserves

Scale 1 Inch = 4 Miles

5 0 5 10 Miles



REFERENCE

- District Boundary
- Taluk Boundary
- Railway Line & Station
- Range Limits
- River & Stream
- Reserved Forest
- Locol Fund Roads
- Forest Roads
- Do. Bridle Path
- Do. Buildings
- Towns
- Reserved Lands

(Signed) E. Hooper
Ag. Conservator of Forests S. G.

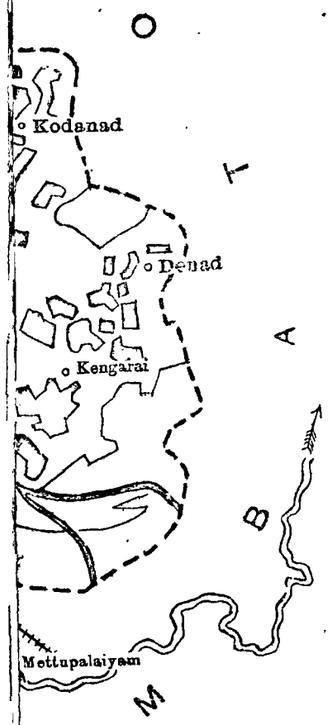
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1897

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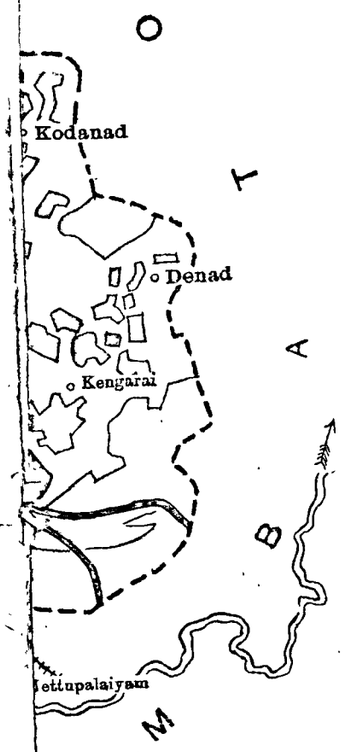
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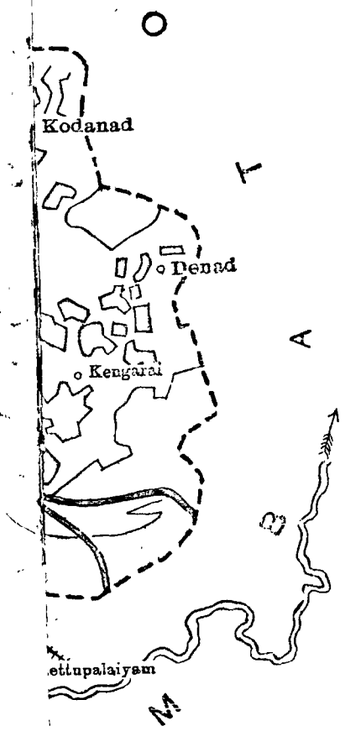
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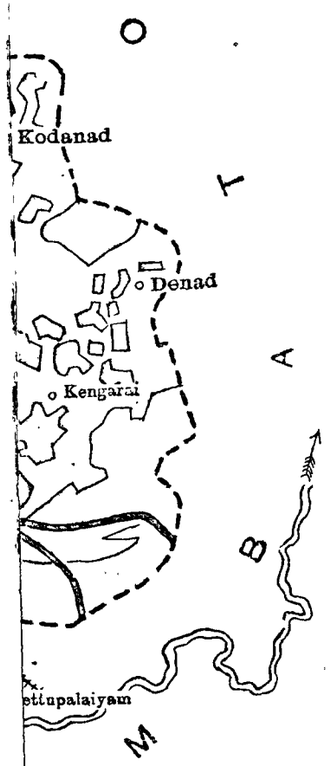
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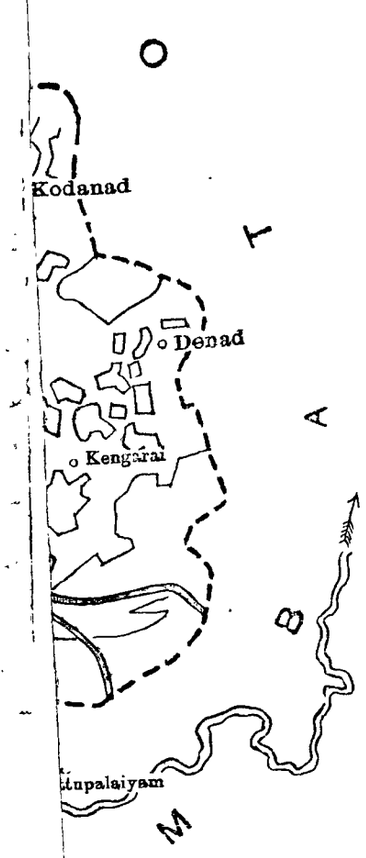
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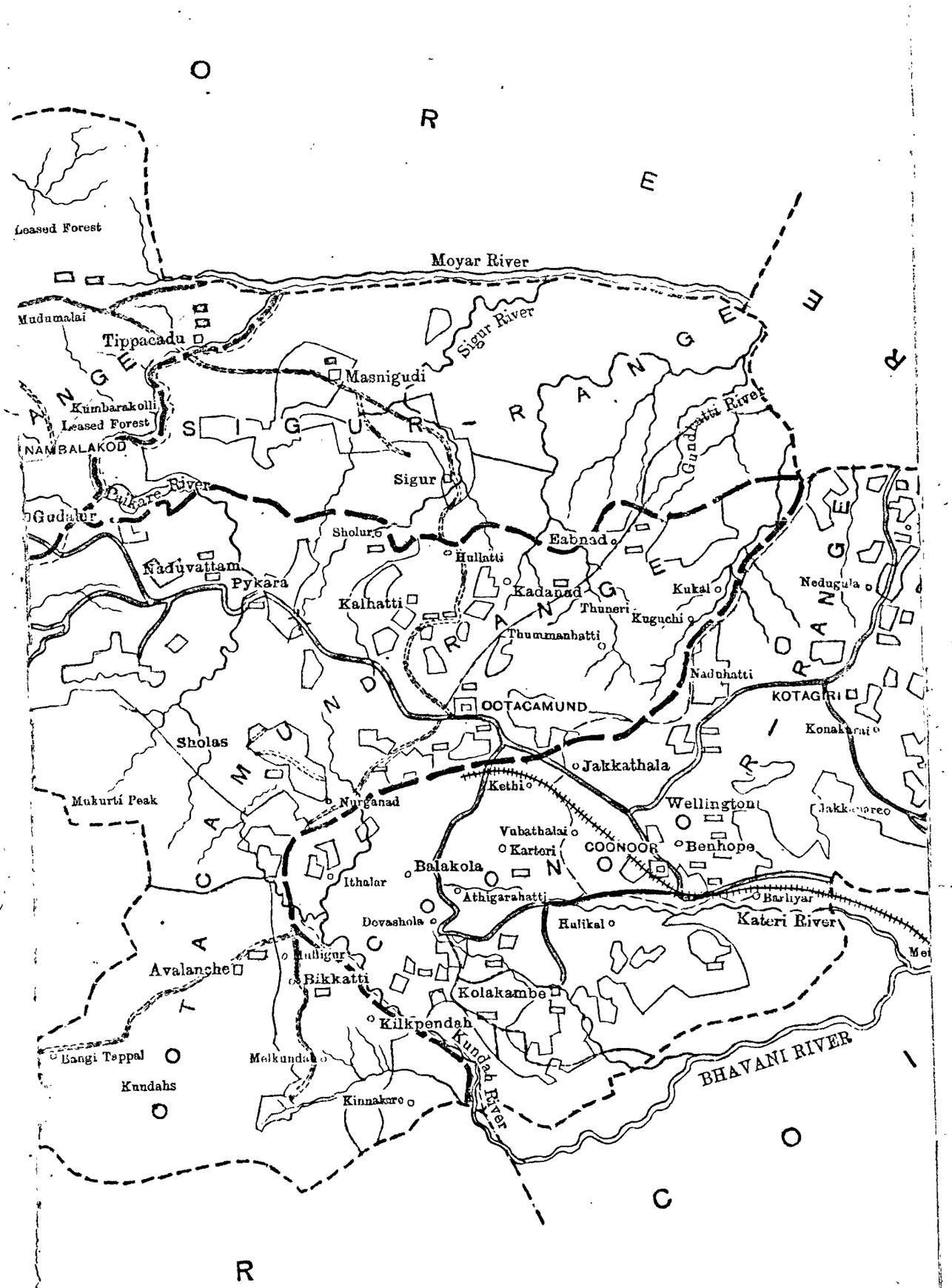


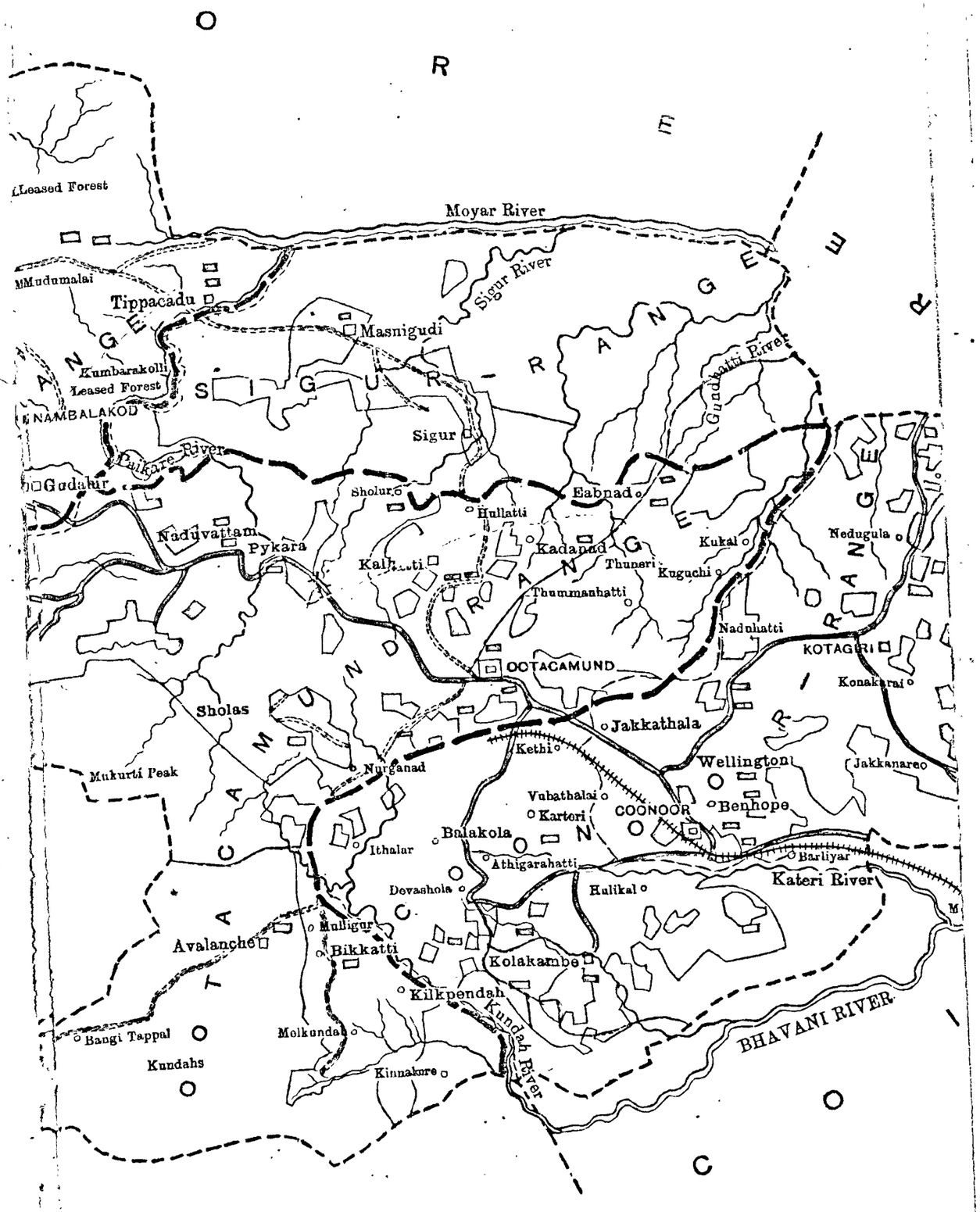
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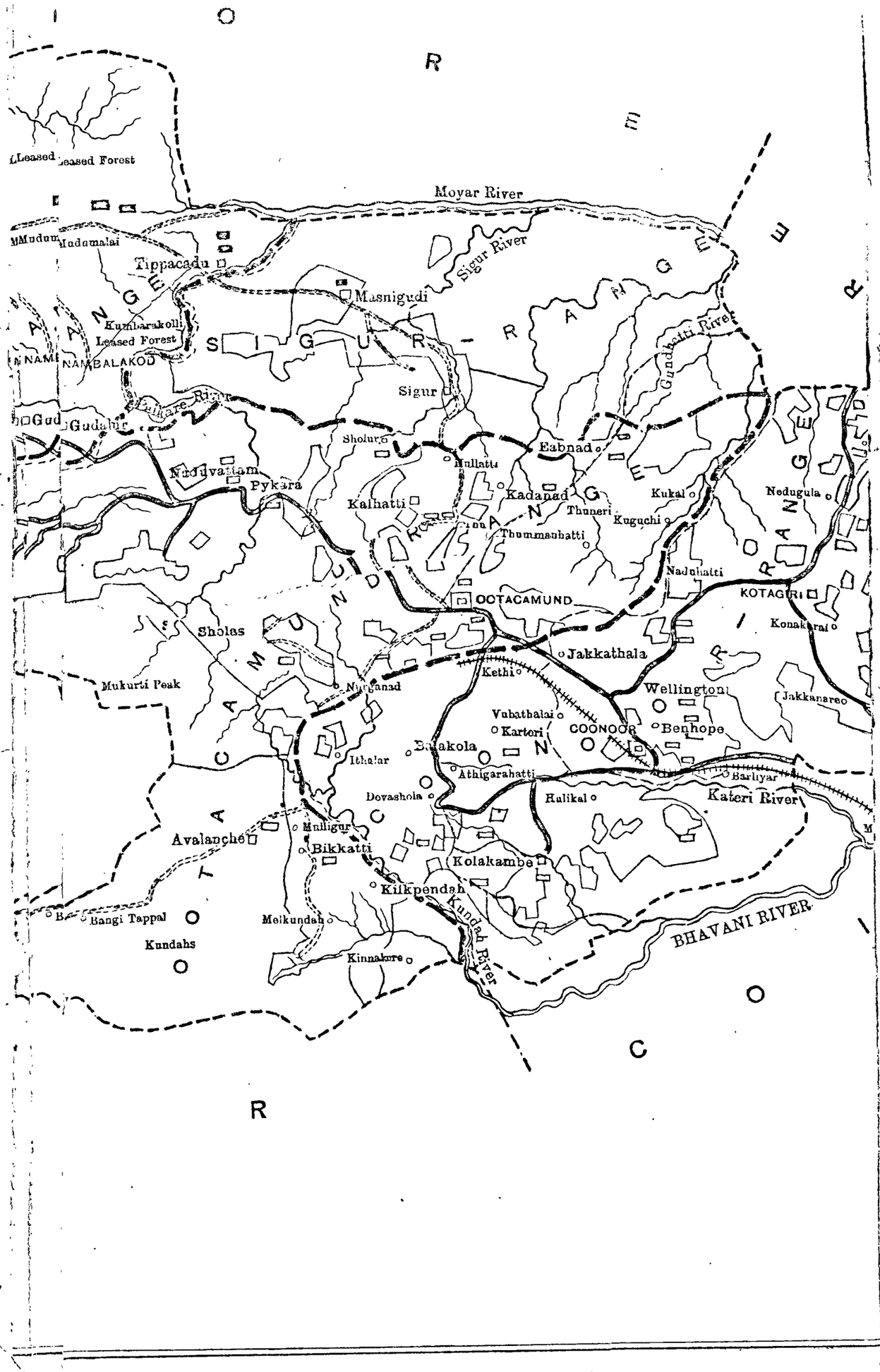
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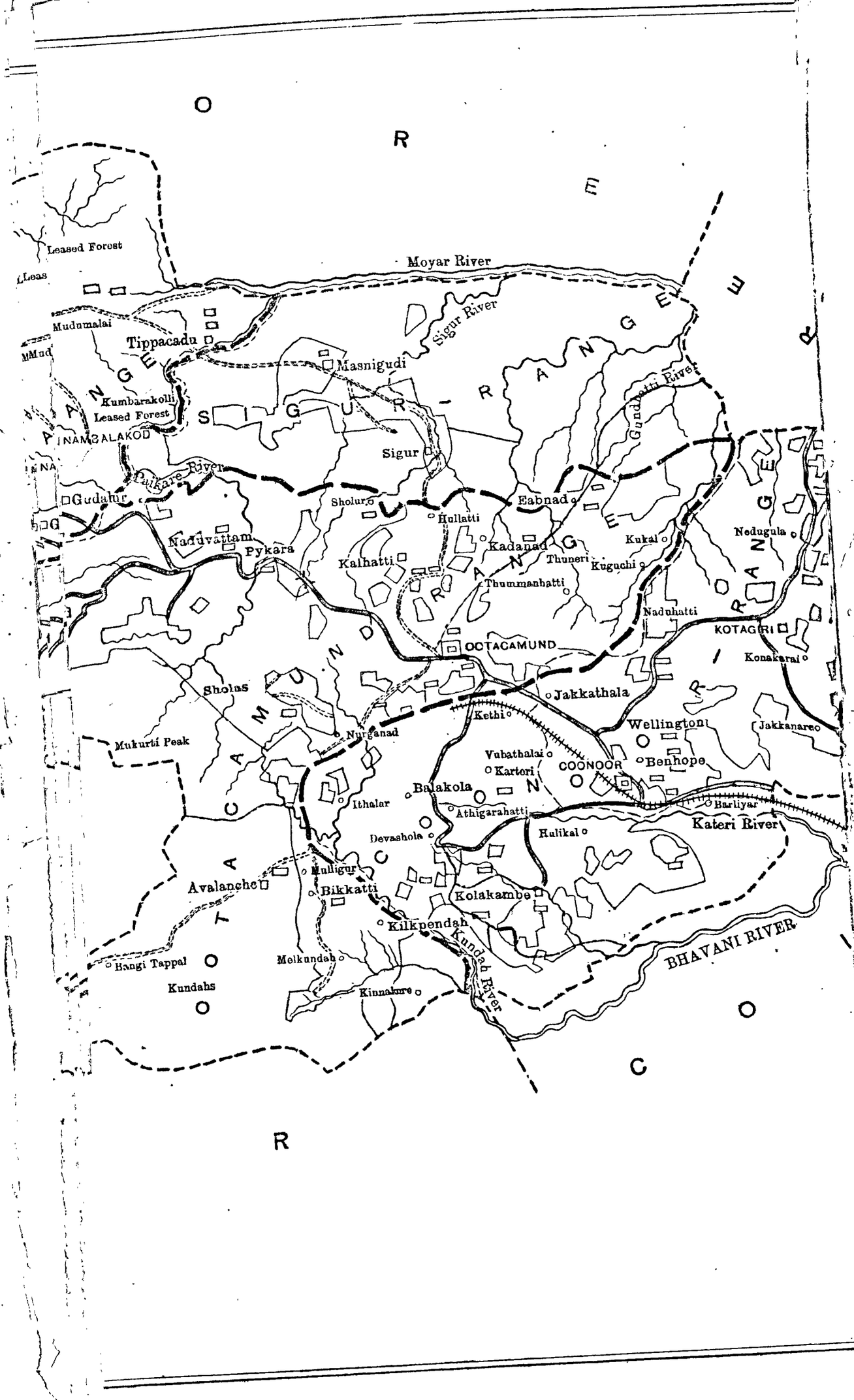
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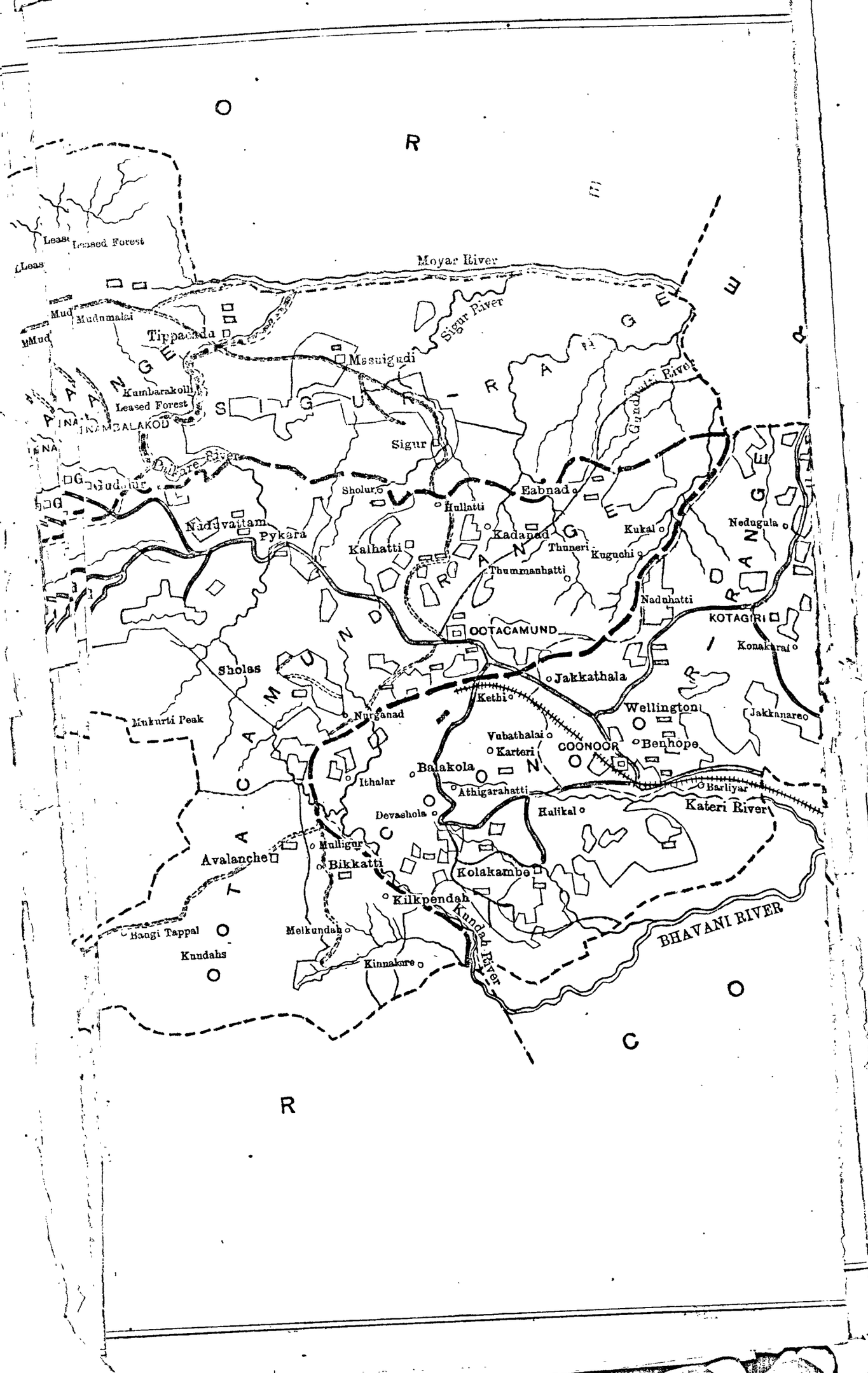
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1897


Leased Forest
Moyar River
Mudumalai
Tippacadu
Masnigudi
Sigur River
Gundhatti River
Kumbarakolli
Leased Forest
NAMBALAKOD
SIGUR
Sigur
Pykara River
Gudalur
Sholur
Eabnad
Hullatti
Naduvattam
Pykara
Kalhatti
Kadanad
Thuneri
Kukal
Kuguchi
Nedugula
Thummanhatti
Naduhatti
KOTAGIRI
OOTACAMUND
Konakorai
Sholas
Jakkathala
Kethi
Mukurti Peak
Nurganad
Wellington
Vubathalai
Kartori
COONOOR
Benhope
Balakola
Ithalar
Athigarahatti
Barliyar
Kateri River
Devashola
Kulikal
Mulligur
Avalanche
Bikkatti
Kolakambe
Kilkpendah
Kundah River
BHAVANI RIVER
Bangi Teppal
Kundahs
Melkunda
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Leased Forest
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Mudumalai
Tippacadu
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Sigur River
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Gundhatti River
Pykara River
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Eabnad
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COONOOR
Benhope
Balakola
Ithalar
Athigarahatti
Barliyar
Kateri River
Devashola
Hulikal
Mulligur
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Bikkatti
Kolakambe
Kilkpendah
Kundah River
BHAVANI RIVER
Bangi Tappal
Kundahs
Molkundah
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Leased Forest
Moyar River
Mudumalai
Tippacadu
Masnigudi
Sigur River
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Gundhatti River
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Wellington
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Athigarahatti
Dovashola
Kulikal
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Milligur
Bikkatti
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Kundahs
Melkundah
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Kinnakore
BHAVANI RIVER


Leased Forest
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SIGUR RANGE
KOTAGIRI RANGE
KUNDAH RANGE


Leased Forest
Moyar River
Mudumalai
Tippacada
Masinigudi
Sigur River
Kumbarakolli
Leased Forest
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Gundhatti River
Bullare River
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Kalhatti
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Mulligur
Avalanche
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Kundah River
BHAVANI RIVER
Baagi Tappal
Kundahs
Melkundah
Kinnakore

Leased Forest

Moyar River

Sigur River

Gundhatti River

Kumbarakolli Leased Forest

NAMBALAKOD

SIGUR RANGE

Sigur

Gudalur

Paikara River

Sholur

Hullatti

Eabnad

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KOTAGIRI

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Wellington

Jakkanari

Mukurti Peak

Nurganad

Vubathalai

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Benhope

Balakola

Ithalar

Athigarahatti

Barliyar

Kateri River

Devashola

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Avalanche

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BHAVANI RIVER

Bangi Tappal

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CHERANKOD

MUDUMALAI

Cherambadi

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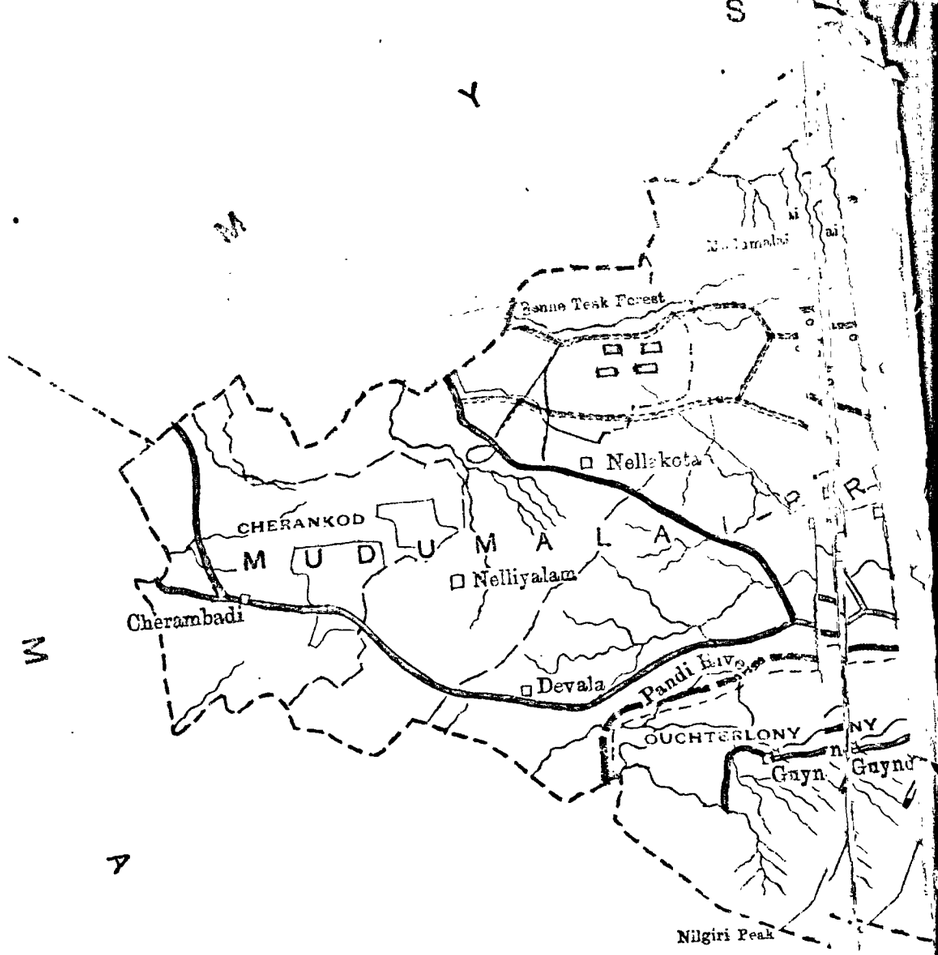
Devala

Pandi River

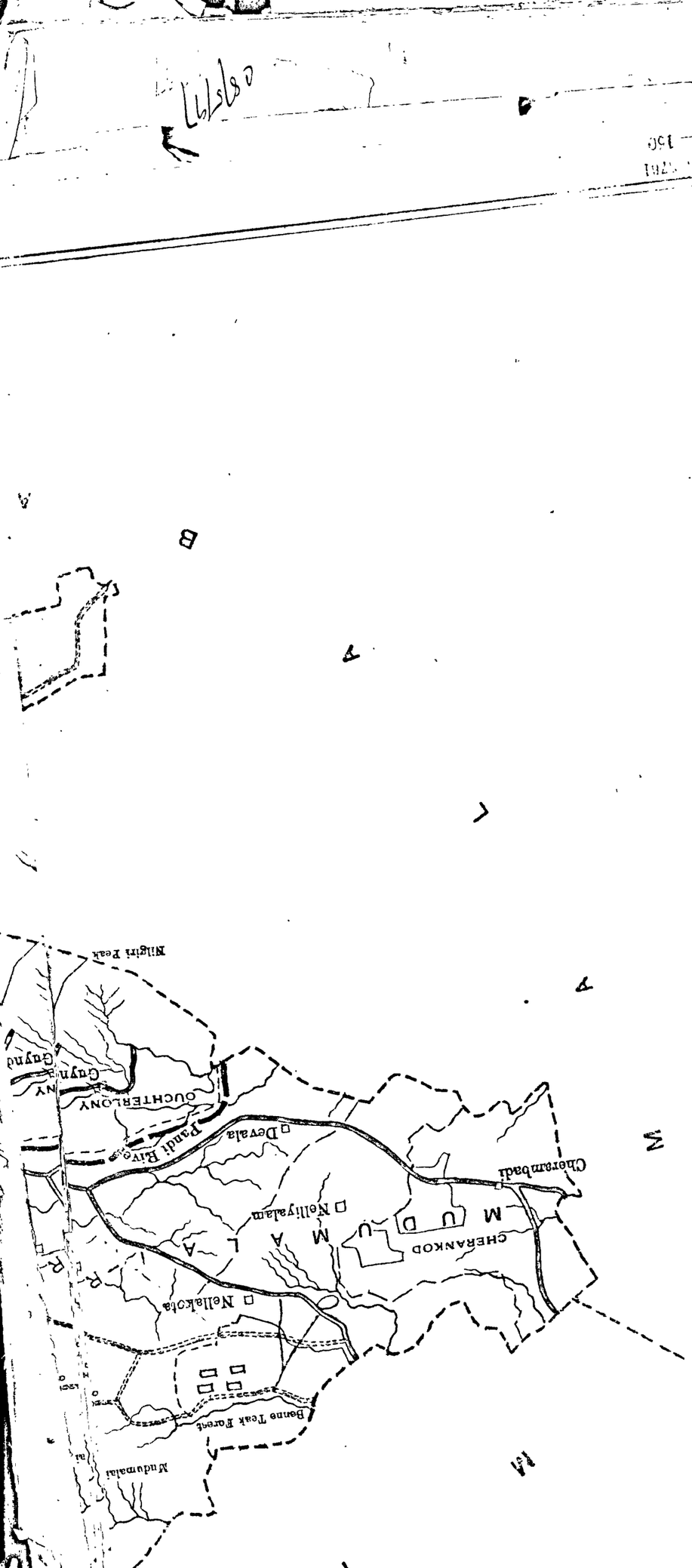
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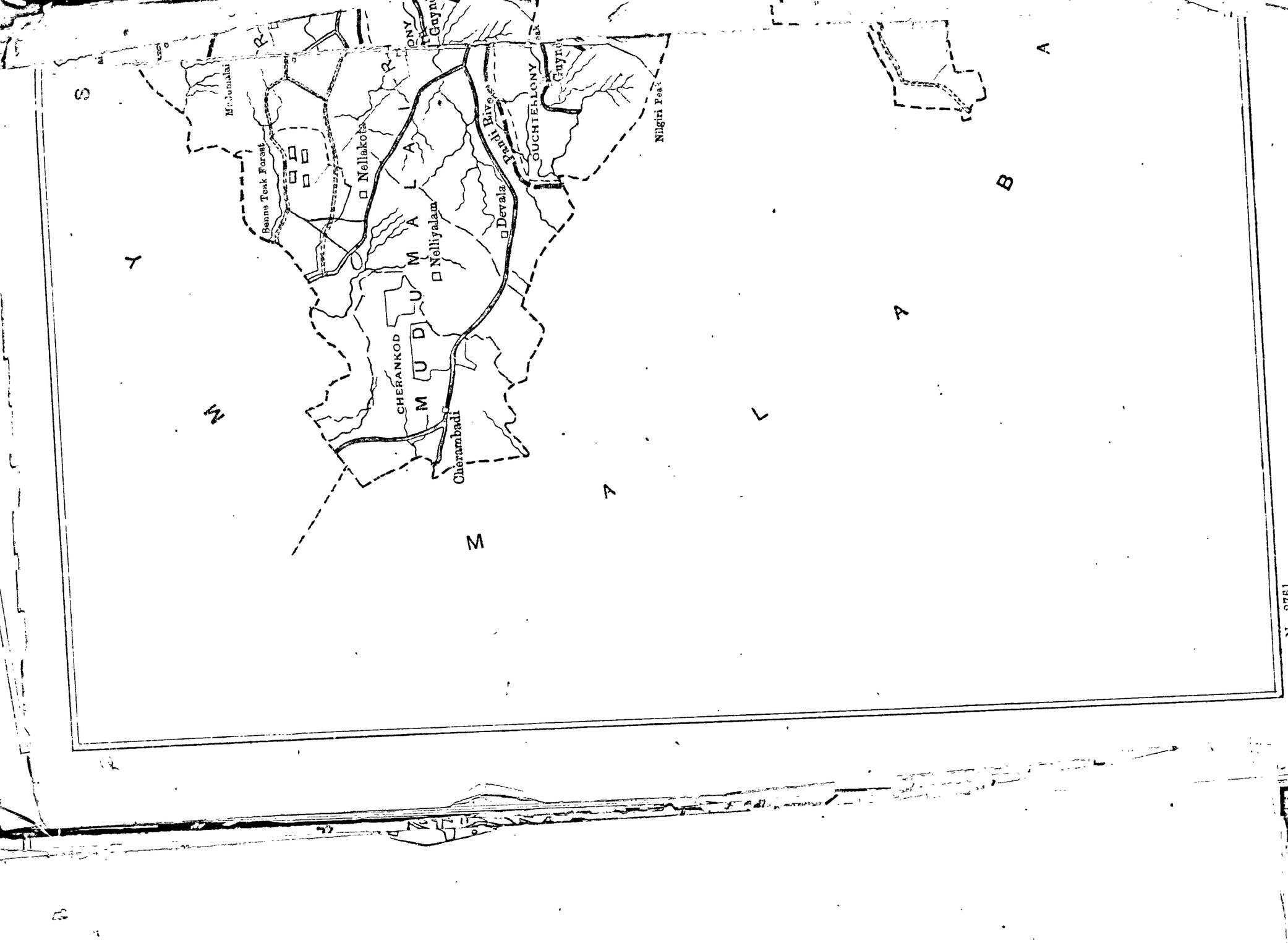
Nilgiri Peak

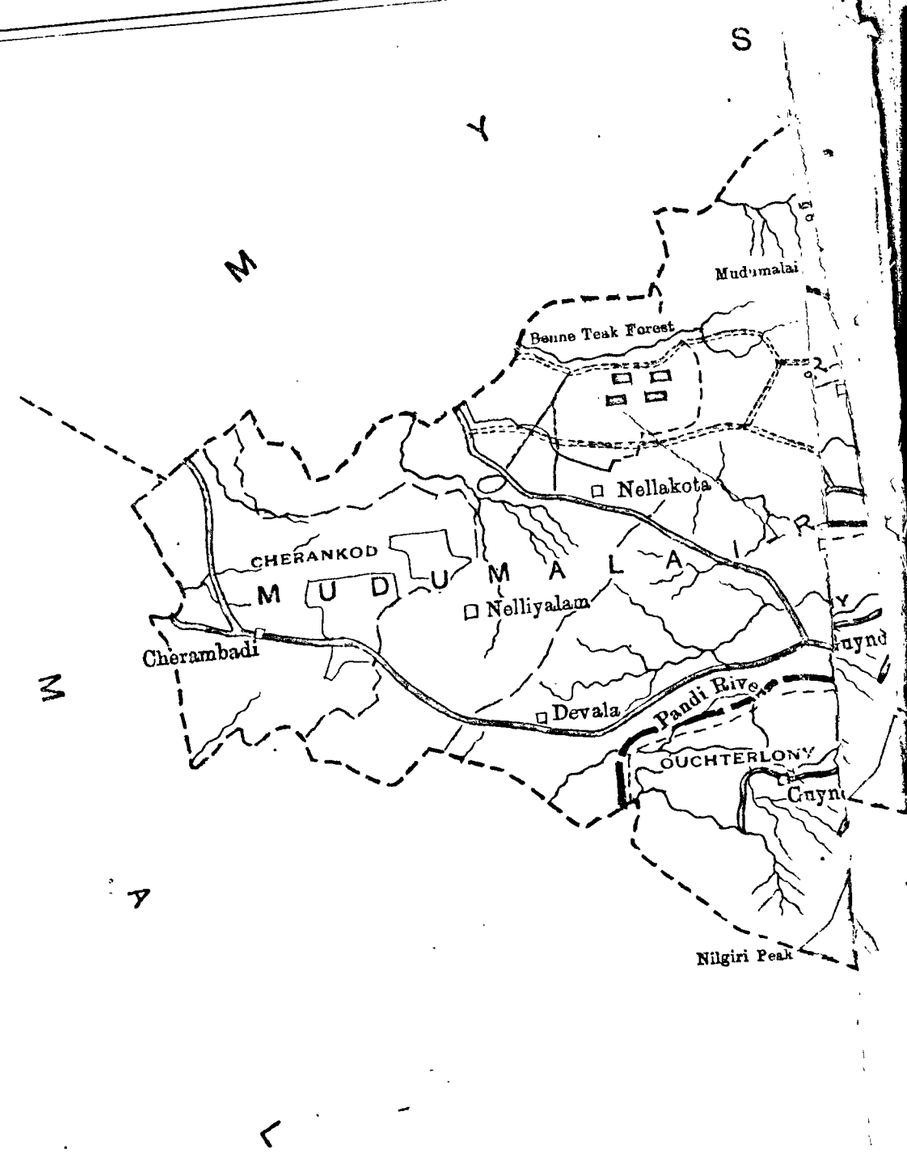
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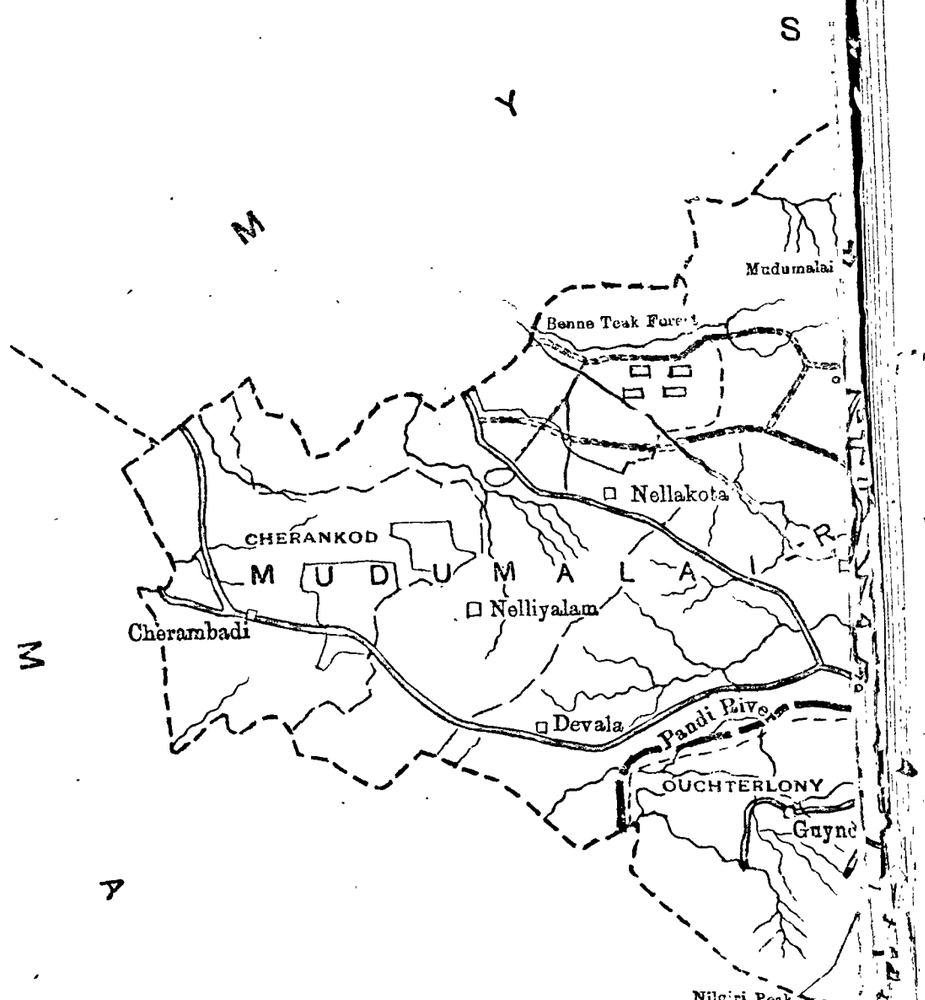
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Pandi Biv
Devala
Cheerambadi
M U D U M A L A I
CHERANKOD
Nellakota
Nelliyalam
Benne Teak Forest
Mudumalai


Nellakota
Nelliyalam
Devala
Cheranmbadi
CHERANKOD
Benna Teak Forest
Nilgiri Peak
Pandi River
OOCHTEHLONY
MALABAR


Mudumalai
Benne Teak Forest
Nellakota
CHERANKOD
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Nelliyalam
Cherambadi
Devala
Pandi Rive
OUCHTERLONY
Nilgiri Peak

Reg: No. 3761



REVENUE DEPARTMENT.

1897.

Board of Revenue

(Land Revenue),

MADRAS.

Printed April th.

Proceedings, Forest No. 121, 20th March 1897.

MARCH.

Reviewing the inspection report of the Conservator of Forests, Southern Circle, on the forests of the Nilgiri district.

PROCEEDINGS OF THE BOARD OF REVENUE
(LAND REVENUE).

READ—the following letter from E. D. M. HOOPER, Esq., Acting Conservator of Forests, Southern Circle, to the Secretary to the Commissioners of Land Revenue (through the Collector of Nilgiris), dated Coimbatore, 12th November 1896, No. 1787 :—

I have the honour to submit for the information of the Forest member an inspection note on the forests of the Nilgiri district together with an appendix recording along with a small map as much of their previous history as I have been able to discover.

ENCLOSURE No. 1.

INSPECTION NOTES—NILGIRI DISTRICT.

Inspection Notes.

Tour.—The inspection note now submitted is based on observations made on various tours which included visits to the plantations and sholas in and around the settlements of Coonoor, Ootacamund and Kotagiri—the ghât forests both on the south and north of the district and the Wynaad forests along the Moyar river including Mudumalai and Benne. The Kundahs and the north-west of the Todanâd were also visited as well as the Badaga plantations in Ebanad. The District Forest office was inspected as also the Range offices of Coonoor, Ootacamund, Sigur and Mudumalai, and the depôts at Ootacamund, Coonoor and Wellington. The Acting Conservator also held charge of the current duties of the District Forest office for a month and thereby became thoroughly acquainted with the details of the works on hand.

Collector's Remarks.

2. *Previous inspection notes.*—Subsequent to the reorganization of 1882 by which the District Forest-officer became the Forest Assistant of the Collector, the reports of inspection by Conservators have been recorded in various Board's Proceedings, and from them the following facts have been collected.

3. Mr. Gamble in December 1884—Proceedings No. 271-F.-54, dated 27th January 1885—inspected the South-east Wynaad and the Moyar valley forests. This report describes in general terms the growth in the Mudumalai leased forests,

Collector's Remarks.

Inspection Notes.

and, after pointing out drawbacks in the terms on which they were leased from the Tirumalpad of Nilambúr, described a plan of operations for the improvement of the young stock and the removal of mature produce from a compartment each year—such compartments to be selected in the first place by marking them off arbitrarily on the map. The report also referred to the roads and buildings absolutely required, described the Moyar reserve and the sandal plantation in the Northernbay reserve which had then cost Rs. 437 per acre and was being yearly protected from fire with indifferent success. The report proposed cheaper measures for conserving it.

4. The same officer—Proceedings, Forest No. 48, dated 1st February 1887—reported further on the working of Mudumalai improvement operations amplifying his previous suggestions, and pointing out how best to carry them out. It should be noted that the lease of the forests was modified at this time, the main alteration being the acquisition of the Kombarakolli forest and the right to continue the lease after the 99 years of original grant were completed in return for an increased yearly payment of Rs. 1,000.

The next important report was published in Proceedings, Forest No. 447 of 5th August 1887. It contains a statistical account of the district and a descriptive account of the different ranges, and enumerates the species of which the sholas at the different elevations chiefly consist. It deals in detail with the different plantations of *Eucalyptus* and *Wattle* and formulates preliminary schemes for working each. The report also lays down general principles for operations in shola growth and for dealing with dry scrub forests. This report dealt very fully with the treatment of the blocks, but Government was not prepared to agree with the proposal for work in the sholas as tending to replace their beautifully irregular appearance by an unpleasing uniformity.

5. Mr. Peet in his letter printed in Proceedings, Forest No. 544, dated 21st September 1887, pointed out that to protect the sholas from losing their appearance the operations in them should be restricted to the highest selection fellings and not to introduce the coppicing of them

Inspection Notes.

Collector's Remarks.

with reservation of standards. The Government order in this matter declared that nothing was to be taken from sholas in the settlement and blanks in them were not to be filled by bluegums and *acacias*.

6. I can find no inspection note subsequently until that of Mr. Cherry in Proceedings, Forest No. 48, dated 24th January 1893. In the interval, the district had been transferred from the Northern to the Southern Circle in April 1891; the office was inspected in November 1889 and again in August 1891 and there was also correspondence on the treatment of sholas and further reservation of forest.

7. The first inspection note by Mr. Cherry dealt with various subjects comprising the progress in and system of selection which was not so advanced as supposed prior to Conservator's report in Board's Proceedings, Forest No. 357, dated 13th August 1891, nor was it so accurate or satisfactory as believed, the boundaries required personal inspection, the cairns erected were too small and there were insufficient sign-boards. The Kundah reserves were dealt with in detail, the modification of their area by extensions, the excessive grazing in them, and its ill effects. It was remarked that the advent of the Government of India Survey Department to the Nilgiris was unnecessary at present, the village maps sufficing for all current works. He advocated the planting of more hard timbers mentioning *Cupressus*, *Arancarius* and *Deodara* and made a suggestion to cutblue gum at eight years in place of ten years. The difficulties in carrying into practice the provisions of the working plan for Kullar and Burlyar were adverted to and the question of coppice in sholas, the growth of prickly-pear in the Sigur forest, the approaching exhaustion of sandal were also casually referred to.

As regards Mudumalai, the idea was mooted of selecting a healthier forest station and the advantages of Gurugani were discussed and another site Chickanandibetta (central for the forests including Chedleth) where a serambi should be built. Reference is made to the damage by yearly fires in Mudumalai, and the comparative uselessness of the methods adopted to prevent them.

Collector's Remarks.

Inspection Notes.

He advocated more organized and restricted working in Benne and Mudumalai, the thinning of the teak plantations and their pruning. He concluded by his inspection notes of the office.

8. As a result of this inspection the Board ordered Mr. Popert to inspect the timber forests of Mudumalai and his report will be referred to further on.

9. Mr. Cherry in the following year again submitted an inspection note recorded in Proceedings, Forest No. 823, dated 7th December 1893. His remarks dealt with selection of boundaries and demarcation. The policy to be adopted in further selections, extensions of reserves even to the extent of buying private lands, to improve areas and straighten boundaries. The reasons for the small revenue derived were also discussed—also grazing, roads and buildings.

The Acting Collector's remarks were in general consonance with the views of Conservator, but the permanent Collector on return took exception to some important items of policy in dealing with the Badagas and their expansion.

10. Mr. Cherry also reported—*vide* Proceedings, Forest No. 824, dated 7th December 1893—on the progress of the operations in Mudumalai initiated by Mr. Gamble in 1885.

11. A third inspection note by Mr. Cherry is recorded in Proceedings, Forest No. 96 of 18th February 1895. On this occasion the chief matters treated were the plantations and the difficulty of disposing of their produce, the abandonment of the Burlyar working scheme and the Todanad selections. The working of the different plantations, statistics of cost and of return from charcoal, the use and abuse of forest bungalows by the public, the municipal assessment on the plantations, and free grants of produce from reserves to Todas were also touched upon.

12. The report by Mr. Popert on the Mudumalai leased forest is recorded in Proceedings, Forest No. 174, dated 4th April 1895.

13. One other report of interest is printed in Proceedings, Forest No. 609 of 3rd November 1892. It gives the sanction to expenditure on planting lands outside reserved forest for the immediate

Inspection Notes.

Collector's Remarks.

benefit of the adjoining Badaga populations and the result of the operations will now be specially reported.

14. *Settlement.*—The Forest Settlement is being carried on by the Head Assistant Collector and presents little difficulty though it cannot, of course, progress as with a whole-time Forest Settlement-officer. The work in Merknad has been completed and with the careful preparatory work in the other nads there should be little delay in carrying out the settlement remaining to be done amounting in all to 53 square miles especially if we apply the rules here proposed as a test to the selections which are to stand. It is certain, however, that the detail of demarcation and settlement will largely occupy the time of the Coonoor and Ootacamund Range officers for another two years.

15. *Selection.*—The area of reserved forests on 30th June 1896 is reported to be 356·94 square miles. This may be taken to represent the reservation of the forests properly so called situated on the Nilgiri slopes and the Wynaad plateau, the Kundahs and hill tracts in the upper valley of the Pykara river, also the sholas of importance on the plateau. The selection of these tracts was mainly conducted prior to the amended policy of 1890 when it was decided definitely that our operations should be extended to provide village requirements notably in grazing hitherto met from Government land outside the reserves. The correspondence which ensued has led to the settlement of a large number of areas of village forests and areas available for sale, some of small size and with awkward boundaries, with the hope of improving whatever growth they possess in the interest of adjoining villagers. It was decided—Proceedings, Forest No. 448 of 19th August 1892—that each nad should be treated separately, and proposals for reservation were submitted for them successively after examination of the ground by the District Forest-officer. In this way a decision has been come to for the whole district though the details connected with the definite selection of many of the minor areas have still to be worked out in Paranginad and South east Wynaad, and after the views of the permanent Conservator and Collector have been so freely expressed, there

Collector's Remarks.

There is some force in Mr. Hooper's remarks, but in a tract of country that has been heavily cultivated by the Badoga and on which a few small village forests or patches of reserved land constitute the only remaining tree growth, it is difficult to know what to select and to reject. I think that as in Merkunad, Board's Proceedings, Forest No. 728, dated 27th November 1894, so in Paranginad, the Forest Settlement-officer might be left to exercise his discretion in the matter of these smaller areas and relinquish such as he considers are better left for the free use and benefit of the surrounding populace. The District Forest-officer can always be consulted and, if any serious difference of opinion arises, it can be referred for the decision of the Collector.

(Intld.) H. T.

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seems to be no reason for referring to the question at this late hour, though from the point of view of the general interest or even of the forest interest, the expediency is doubtful of multiplying very small reserves of land which at no distant period may be required for extension of adjoining Badaga cultivation, or which have sinuous boundaries or require expensive planting operations of doubtful effect (from poverty of soil or other causes) to bring them again under wood if ever they were so before. For this reason it would be as well to amend the plan on which future selections are to be based and to withdraw from settlement such of the existing selections as come under the category described. The fact has to be faced that our work in the Nilgiris so far as sholas and plateau areas generally are concerned will be expensive and for a long period unremunerative. We have numbers of small sholas which are too small to be of use even were we allowed to treat them other than as picturesque features of the landscape and the charge for protecting them including demarcation, reclearing and protective establishment constitutes a yearly expense for which we have an inadequate financial return except from grazing and occasional permit sales of fallen timber. The reserved village forests come to us for the most part bare of growth in urgent need of expensive conservation which will scarcely prove financially profitable as an investment. It therefore follows that we must be thoroughly sure of the benefits likely to accrue before we proceed with our policy on its present lines and be equally positive that necessary restrictions on the use of the areas while in their degraded conditions can be enforced on the rural population adjoining.

16. *Demarcation.*—The return for 30th June 1896 shows a total expenditure to date of Rs. 31,292 under this head for a cleared and partly re-cleared length of 1,493 miles and for the cairns and pillars built on it.

17. The character of the early work was criticised unfavourably by Colonel Campbell Walker in 1891, and an improvement effected by Mr. Rhodes Morgan was noted by Mr. Cherry in 1893–94.

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Since then the work has continued slowly but carefully. The points which came to my notice during inspection were that, in some instances, where boundaries had been altered cairns on the previous line had not as yet been removed and the unnecessary clearing of lines between adjoining forest reserves where such dividing lines are not motived by intensive working requiring sub-division into blocks.

The expense of this demarcation of profitless sholas has been already noted and no effort should be spared to reduce it. In the numerous cases where blocks are clearly defined by the shola growth itself, it is obviously sufficient to build cairns within sight of each other or at angles on the boundary when there are no revenue survey stones or these latter are insufficiently prominent to mark the boundary. The clearing of a line within the cairned limits represents not only an expensive but a serious diminution of the area of the smaller blocks. In such instances the rule of clearing within the line of cairns need not be adhered to and this view of the matter has appealed to Mr. Douglas also.

18. The most pressing work apart from the final demarcation of the various settled blocks is the preliminary demarcation of the Wenlock Downs reservation and the further selections in South-east Wynaad.

The former work has awaited the cessation of the south-west monsoon and is now being proceeded with by the agency of the ordinary establishment, but for the other selections, the appointment of a temporary Demarcation officer has been approved; since the Mudumalai Range officer with the charge of Sigur added to the special works claiming his attention in Mudumalai and Benne cannot personally carry out this demarcation with the young Foresters available, the latter being deputed to execute the improvement fellings and other timber and sandal works. Application for the services of a special Demarcation officer has been separately made and sanctioned and we should advisedly employ a middle-aged man of local experience and debit his salary to the special sub-head of forest account dealing with demarcation.

Collector's Remarks.

The matter will be attended to. Mr. Hooper does not quote instances and the District Forest-officer informs me that he is not at present aware of any.

(Intld.) H T.

I understand that the District Forest-officer some time ago took objection to those clearings and directed the Range officer concerned on no account to make any more without reference to him.

(Intld.) H. T.

The Special Demarcation officer has been engaged and sent down to South-east Wynaad.

(Intld.) H. T.

Collector's Remarks.

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19. *Establishment.*—The staff employed at present in the district is as follows:—

				Rs.
One Ranger	...	...	...	125
Do.	...	...	...	80
Do.	...	...	...	50
drawing temporary salary of Rs.				80
Two Deputy Rangers	...	...		40
Three Foresters	...	...		20
One Forester, temporary		...		20
assisted by—				
Two Forest Guards		...	...	12
Four do.		...	...	10
Twelve do.		...	...	8
Twelve do.		...	...	7

and 22 watchers drawing Rs. 183 per mensem—also Depôt establishments costing Rs. 78 and Elephant establishment costing Rs. 114.

The total charge including Wynaad allowance of Rs. 12 comes to a monthly sum of Rs. 1,076.

The reorganization scale proposed in 1891 and now under final sanction is as follows:—

				Rs.
One Ranger	...	...	...	150
Do.	...	...	...	100
Do.	...	...	...	80
Do.	...	...	...	60
Two Deputy Rangers	...		...	40
Do.		...	...	30
One Forester	...	...	...	25
Do.		...	...	20
One Reserve Forester	...		...	15
Four Forest Guards		...	...	12
Six do.		...	...	10
Eight do.		...	...	9
Twenty-two do.		...	...	8

and assuming the same Depôt and Elephant establishments are employed, the monthly cost would then be Rs. 1,150 including Wynaad allowance of Rs. 12.

20. The matter has been discussed with Mr. Douglas and after considering the works in each range it is agreed that the present staff in the Coonoor Range can be reduced to strengthen that employed in Mudumalai and Sigur. In Coonoor Range, apart from the plantation management around the settlement, the only operations in the immediate future are demarcation and general protection with the issue of permits and some fire-protection along the lower levels of the slopes. Instead of, as heretofore, the Ranger at Coonoor being assisted by Foresters at Karteri and Kotagiri and Kullar we would post Foresters at Coonoor

Inspection Notes.

and Kullar; the former to be employed entirely under the Ranger's orders for work on the plateau. This will obviate the rebuilding, at any rate for the present, of the Foresters' huts at Karteri and Kotagiri, the former destroyed accidentally by fire and the latter in a dilapidated state on a bad site.

In Mudumalai Range it is thought the Sigur works can better be controlled by the Mudumalai Range officer than as a separate Range charge, for the present at any rate. The works consist of sandal fellings, fire-protection of the Moyar reserve, general protection and issue and check of grazing permits, all of which can better be done by a young Forester controlled by the trained Ranger in Mudumalai than by the Forester unaided by such control and advice.

The improvement fellings and fire-protection in Mudumalai will require the full attention of one Forester, the elephants and timber works that of a second, and for the demarcation in South-east Wynaad a special temporary officer is requisite. The Forester released from Coonoor will therefore be required for Mudumalai. In Ootacamund a Ranger and Deputy Ranger must continue until settlement and demarcation are complete and until the working of the plantations is in a more advanced state than at present.

21. The change advocated therefore is the transfer of one Forester from Coonoor to Wynaad and the temporary employment of a Demarcation officer, but an important consideration always to be kept in view is the peculiarly unfavourable climatic conditions to which the Range establishments are exposed. The influence of the bleak plateau climate makes itself equally felt with the malaria of the Terai country in Wynaad and below Coonoor, there consequently arises the necessity for replacing sickmen at constantly recurring intervals and it will always be necessary to have ready an extra Forester for this purpose who may with advantage be permanently attached to the Nilgiri district.

The present arrangement of paying the Wynaad Range officer a salary of Rs. 80 should continue, the extra pay has reconciled the officers to the inconveniences of the place and has stimulated them in their work with good results.

Collector's Remarks.

It should be understood that the scale now proposed by the Conservator is tentative only and not in absolute supersession of that contemplated by the scheme of reorganization. The combination of the Sigur and Mudumalai Ranges under one

Collector's Remarks.

officer is, in particular, purely experimental and may not always be found to answer as well as it has done hitherto. It happens that the officers who have as yet held the double charge are well acquainted with both ranges.

(Intld.) H. T.

Noted. The District Forest-officer's instructions were misunderstood. The Range maps should have been prepared as now suggested by the Conservator. The matter is being attended to.

(Intld.) H. T.

Noted. (Intld.) H. T.

Noted. (Intld.) H. T.

Inspection Notes.

The staff, therefore, advocated is the present one supplemented by a supernumerary Forester and a temporary Demarcation officer. Comparing this with the reorganization proposed staff, it is found to be less by one Ranger and two Deputy Rangers and more by two Foresters and one temporary Demarcation officer; but it should be borne in mind that only present needs are provided for, and a minimum scale for supplying them.

22. As regards Forest Guards, those in the Ootacamund and Coonoor Ranges compare unfavourably with those elsewhere. It would appear that their work is irksome to them in this cold and damp climate, while the pay is insufficient to make the posts attractive. On the other hand it was pleasing to find such willing workers among the Wynaad Guards who have a very rough, uncomfortable and unhealthy existence.

23. *Maps.*—Each Range officer has a district map the forests in his range being alone shown. Four other district maps are kept at head-quarters each in four sheets being copies of the four range maps. It would suffice if one copy were kept showing on it all forests of all ranges and the present copies might with convenience be cut down to maps of the ranges, and this is all that a Range officer himself requires.

The office reference map of the district is on the large scale of $\frac{1}{2}$" to the mile and posted up to 30th June 1896.

The reserve maps only exist on village maps 16" to the mile and 8" scale (Paranginad and Kundahs). They have not been separately prepared. Range officers are supplied with village maps, but the forest boundaries have not been recorded by the District Forest-officer upon them. Working Circle maps comprise those of fuel plantations (Ootacamund and Coonoor) and Mudumalai.

The original forest reserve maps are part of the settlement record, but they have been detached from it and filed in the Forest office. Only copies should be so filed, the original map being an important part of the Settlement Judicial record.

24. *Natural Regeneration.*—Our experience up to the present tends to show that for the continuance of our forest we must look

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to the natural regeneration of the species of which it is composed and have recourse only to plantation under exceptional circumstances. In the Nilgiri district we have to deal with growth at all elevations from 1,500 to 8,500 feet with all varying aspects and exposed to all the different local climates resulting from these conditions. On the ground we find them manifested by a marked difference of species, as well as by the dimensions attained by individual trees and to enable us to treat them with any hope of assisting in their natural development the greatest care must be exercised, for we are only too apt to upset the balance of nature in such a way as to deprive some of the species of the support of others and stimulate an inferior growth which may prove not only useless but harmful in extirpating the useful trees. This is especially to be guarded against in our operations in the Nilgiris and notably on the plateau where the shola growth is being only gradually recognized as the outcome of conditions with which we are not by any means fully conversant. It is true that they are natural forests occupying clearly defined areas the nucleus of which so to speak is almost invariably on soil of the same character and similarly situated, but their extension to adjoining lands has been effected under peculiarly favourable circumstances, which once changed, are likely to result in their speedy degradation. Shola may therefore be regarded as a peculiarly sensitive and delicate growth requiring the utmost care in its conservancy. There is abundant evidence on the plateau of its gradual disappearance under the influence of fire which, if repeated, kills it slowly but surely from the outside; while on the other hand we see how the shola growth gradually extends where kept free from fire and left entirely to itself. Our first duty to it, therefore, is to keep fire from its borders and to reduce grazing on it as far as possible.

25. Felling operations in such growth should be limited to the removal of only such trees as would speedily decay in the natural course of events and even then, unless they are worth removing, it would be in the interest of the forest to leave them alone. This appears to have been the usual way the growth has been treated in the past, for there is no record of any

Collector's Remarks.

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extraction of timber from the main sholas now existing, and it is probable that the plateau timber used in local construction in the Ootacamund and Coonoor settlements was from shola land since planted up with exotic species. During the past ten years some experimental coppicing has been carried out notably at Naduvattam, but the result has not been satisfactory; the regrowth after eight years being for the most part of a noxious herbaceous species above which only occasional shoots from original tree growth show themselves.

Possibly the shola may eventually reconstitute itself, but it can only happen after the lapse of a very considerable period.

26. It follows then that sholas may be considered as forests incapable of yielding any direct return for the cost involved in their conservancy, and as this cost is in inverse ratio of their size, it will be found necessary to restrict our work to the larger ones, and afford the smaller ones only such protection as can be done without direct expenditure.

The course to be adopted for aiding natural reproduction of the other types of forest growth cannot be so succinctly stated. They comprise the ordinary deciduous species distributed according to altitude and aspect. The dimensions they attain vary with the depth of soil available and in the case of forest tracts accessible to markets, the natural distribution and qualities of the better species are altered by the demands that have been made upon their produce.

27. Speaking generally, our work in connection with these growths comprises their general protection and the avoidance of all operations which may militate against the vigorous growth of the more useful species.

We may in consequence have to stay our hand altogether when growth is thin and exposed, or when the better species cannot do without the surrounding vegetation. In other parts again we may remove sparingly certain trees, but only with the exercise of care and at such expense as to constitute a loss. In other more favoured portions we shall be able to remove much wood with advantage to the species concerned. In the latter case, we have to ensure a demand for the produce and, where this does not exist, it has to be

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Collector's Remarks.

created by opening up the area for facilitating removal. Under one or other of these heads, it will be found that all our deciduous forest can be classified. It must, however, be remembered that it may be advantageous not to open up a forest if, by doing so, we transfer a demand from another more accessible forest also under regular treatment as is the case when adjoining Government forests are in different districts and different circles.

28. The operations to be carried on in the majority of our deciduous forests on the Nilgiri slopes are undoubtedly selection fellings at the higher altitudes, located or coupe fellings being expedient only in favoured localities at the base of the hills. Over a very considerable area we can remove nothing for in the more steep and exposed portions the rate of growth is remarkably slow and we have no means of removing produce if it were available.

29. The main operations in hand, or likely to be carried on, are the fellings in selected blocks in Mudumalai, the selection fellings of large timber both there and in Benne, the coppicing by purchasers of small teak in the Moyar valley, the felling of sandal in Sigur, the supply of small stuff and bamboos from Kullar and Burlyar on permit.

30. The nature of the operations in the selected block of Mudumalai has been decided by the Board and Government under other advice. It must, however, be mentioned that, over a considerable area, the regrowth from former cuttings is a wilderness of mostly worthless species, and the standards have little or no value. Possibly the more useful species may establish themselves later on, but the property is leasehold, and we must avoid working too much for the eventual owner. For this reason, the improvement felling should be carried out only over the best portions, leaving the poor and dry forest to improve itself. These matters are dealt with more fully in the appendix, but being of importance are also referred to in this note as also are the selection fellings over the rest of the forest. But in connection with these latter it should be mentioned that under the writer's instructions the Range officer, Benne, has adopted a system of tapping for kino all vengai (Pterocarpus) trees before they are cut and we shall no longer waste the kino. It is understood that the yield varies up to 3 quarts, the full extract

Collector's Remarks.

I concur; but to be successful here, as elsewhere, adequate supervision is a *sine quâ non*. A good Deputy Ranger is required.

(Intld.) H. T.

Inspection Notes.

from a large tree, 8 feet in circumference. The weight of the dried gum is a little over 2 lb.

31. The coppicing of teak in the Moyar should be successful in every way if care is taken to retain standards and to locate the fellings in order and to rigidly protect the young regrowth from grazing and fire. The stumps should be fairly well dressed and every opportunity taken to determine the rate of growth of teak in this portion of the Wynaad, and the age at which it matures.

32. The treatment of bamboo growth is one that need not be gone into, for we have no market for our produce beyond that asked for from the Coonoor and adjoining slopes.

33. *Artificial reproduction.*—Our work in this connection in the Nilgiris is restricted to the establishment of plantations on the plateau and their renewal when the growth does not reproduce itself naturally.

The oldest of the bluegum and wattle plantations date from 40 years ago, but the majority are now from 15 to 30 years of age. In some instances the growth of bluegum has reproduced itself by coppice, with no diminution of vigor, three separate times the yield being on such occasion phenomenal as compared with that of the natural species of the country or of its own species in its natural habitat in Tasmania and Victoria. The difficulty at present is to find a market for all the exploitable produce, of which some is left standing awaiting the demand anticipated with the opening of the railway. In any case artificial reproduction, so far as existing plantations are concerned, will only be resorted to for introducing other species of Eucalyptus of more general utility than the bluegum has proved to be. It is understood that some of the species have been experimented with in the past, though the history of the operations has not come to light. Already there are large specimens of the red gum which in Australia yields a splendid timber of general use. The Jarrah Eucalyptus Marginata is well worth trying again, unless we are to consider the failure of our trial in 1862 as conclusively proving its unfitness for the climate, while the Grevillea has proved a quick grower and very useful as yielding a light and strong timber. But in all future ventures we should do well to avoid planting on poor and rocky soil notably in regions of small rainfall.

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At present the only planting going on is in the Badaga plantations instituted by order of Government in Board's Proceedings, Forest No. 609, dated 3rd November 1892, with a view to handing over to Badaga village communities an established blue gum forest to be worked by village agency and for the general use of the inhabitants.

On this subject the annual district report for the past year includes the following notice.

To the end of June 1896, 243½ acres were planted, of which 83 were planted twice over. Various species of Eucalyptus as also Acacia dealbata and Acacia melanoxylon; but the result is discouraging and the progress made holds out no promise of the full 500 acres being planted and ready to hand in 1897 or 1898.

The Grevillea is now being tried, it being thought likely to suit the Ebanad. It is umbrageous, and a profuse leaf shedder and of rapid growth. It is hoped it may cover the ground quickly, deposit humus and serve as nurse to other species should it be deemed necessary to plant the interspaces. But the Grevillea is a good timber, and growers of such trees ought to serve all purposes of fuel and timber, and ought to improve the soil without further planting. Should the experiment give no better results than those obtained by Mr. Morgan and since continued by his successor, some other systems must be tried if the aims and objects of the scheme are considered of sufficient importance. The Acting Conservator visited some of the plantations which are well described by Mr. Douglas as having been unsuccessful. This want of success has been partly due to bad planting, but especially to want of protection, the areas being outside reserved forest, whereas had they been within it, they would have received better care, but it would have been contrary to the plan of the scheme.

It will undoubtedly be better to re-stock the blanks in the present area before breaking new ground and before extending; it is for consideration whether we should plant up extensively with forest funds on unprotected land, leaving our expensively acquired but poor reserves without improvement.

The Acting Conservator also inspected the mahogany at Kullar at the base of the Coonoor ghât, and is of opinion the results have not been good enough to justify the

Collector's Remarks.

I agree with Mr. Hooper, and as regards the Baduga plantations, I propose reporting fully on the whole scheme at the close of the period of five years for which it is sanctioned. It will be time enough then to consider the future.

(Intld.) H. T.

Collector's Remarks.

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continuance of the work. At Benne and Mudumalai he also examined the trees notably of the Swietenia macrophylla which grows well until it is attacked by borers here as elsewhere in the Southern Districts. This is an evil to be guarded against if we can possibly do so. An attempt is being made in this direction by putting out the plants far apart in thick forest.

34. *Revenue.*—Under Mr. Douglas' management of the district forests, efforts have been directed to the expansion of the revenue and the reduction of the annual deficit. In the appendix to this note the present state of our work in each range is recorded and it is scarcely probable that we can expect any large increase in our returns except the demand for plantation firewood on the plateau becomes more fixed and extended, and the deciduous growth at the base of the hills is more indented upon. Sandalwood will not continue to give such good returns as in the past, and the increased demand for the smaller timber in the Moyar reserves will be counterbalanced by reduced export from Mudumalai and Benne as the supply of large trees for selection felling becomes exhausted. If the District Forest-officer can keep up his present yearly revenue, he will do well.

35. *Expenditure.*—While the revenue is being steadily protected, the expenditure is being equally well controlled. It is certain that in the past some expenditure has been incurred without good effect, and this result is in part due to the projects of the operations being insufficiently considered or their execution improperly supervised. The sandal plantation in Northern Hay is an instance in point, and our operations at the base of the Coonoor ghât, and unsuccessful Badaga plantations bear witness to the same.

It is also a matter for regret that such large areas were planted experimentally with trees such as Frenela which have not proved a success when the knowledge was equally obtainable by conducting the work on a smaller scale.

36. The appendix shows not only the cost we have incurred in the past, but it also points out what current works are justified, and, with the organisation of operations by working circles and with a

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definite policy laid down for guidance, there will be no reason for wasteful expenditure.

There will always be a proportion of our charges which will bring in no revenue return, and this especially in the case of our working the shola growth. The Kundahs again form an immense yet bare area which like the Downs is naturally grass land and except by planting will practically never be forest, yet as pasture reserve such areas are worth study and protection and some expenditure but only on a small scale.

37. Mr. Douglas is fully alive to the importance of justifying beforehand any large expenditure and is gradually eliminating customary charges which on examination do not appear justifiable. This is notably the case with fire protection which has hitherto been to a great extent a waste of money. On the other hand, a deliberate and costly attempt is being made to carry into effect Mr. Popert's proposals to improve Mudumalai leased forests, and this will be an annually recurring charge which cannot be accurately estimated.

38. The working of the plantations under the revised scheme will necessitate increased expenditure but as it will bring in an immediate return, it may be classed as productive and be sanctioned accordingly.

It will be noted that no extensive roads or buildings are proposed. The only item of road-work is the suggested opening up of the Sigur reserve and there is a fuel slide in Coonoor Peak, the cost of which may or may not be charged against the produce brought down by it like ordinary export paths and tracks which are roughly fashioned for temporary use. As regards buildings, the subordinates', quarters, both at Mudumalai and Benne and even at Masnigudi, must be much improved, for life in such unhealthy localities is only endurable when the residence provided is a healthy one. Some further cost will be incurred on depôt buildings and compound at Ootacamund and on storage sheds for charcoal at the kilns, the present accommodation being notably insufficient at Governor's shola for the amount which accumulates even at present.

Collector's Remarks.

I agree with Mr. Hooper.

(Intld.) H. T.

Collector's Remarks.

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39. *Fire-protection.*—This matter has been much discussed with the District Forest-officer, who is convinced of the misleading character of the returns of previous work. In the Administration report for the past year he has brought this point out in relief and has recorded in the annual statement the areas specially protected separately from those given only general protection, omitting even from the latter as much as 60 per cent. of the area previously reported.

The history of fire conservancy has been studied from 1882 onwards. For 1883–84 an area of less than 1,500 acres were returned as protected for Rs. 875, whereas in 1884–85 Rs. 1,872 were spent on protecting no less than 11,700 acres. Two years later the return for 1886–87 shows 136,500 acres or over ten times the area at a cost of Rs. 3,428 or only double the charge.

The area increased yearly until 1889–90 when Rs. 2,800 in round numbers were spent on the protection of 233,170 acres. Thence onwards the area attempted has remained at 223,000 acres at a yearly decreasing cost, and now Mr. Douglas by eliminating from the returns all areas which were not really protected at all has declared that Rs. 1,922 is the cost of rigid protection of 11,500 acres while 71,723 acres were protected by an expenditure of Rs. 151. The area of rigidly-protected forest as shown by the latest district returns corresponds closely with the specially protected area returned as such in 1886–87 and with the return in 1884–85 and we may consider that, throughout the decade 1886—95, no more than these 11,500 acres were afforded any real continued protection the remaining area varying between 120,000 and 220,000 acres being given only slight, if any, protection on no definite plan with no practical result except to reduce the apparent cost of fire conservancy to a minimum in a most misleading way.

It is not contended that the moderate protection afforded to the enormous area referred to is in any way to be disapproved of or to be definitely abandoned. It cannot, however, be classed as seriously protected and for all practical purposes its protection may be considered accidental, intermittent and not worth placing on record.

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Collector's Remarks.

The operations proposed in the appendix are not calculated to largely increase in the next few years the area under rigid fire conservancy. As regards the general conduct of operations, it will be better to deal with each area on a separate plan and in such a way that the cost of the work in each may be ascertained, both for tracing and patrolling, while for many of the sholas it might be limited to the careful burning of the grass round them early in the season.

40. *Felling operations.*—The main departmental works of this nature to be undertaken are the selection fellings of mature marketable trees in Benne and Mudumalai, the improvement fellings in one compartment of the latter and the cutting back of deformed teak in Moyar and of sandal in the reserves along the base of the northern slopes of the Nilgiris. Separate reference is made to the improvement fellings in Mudumalai and as there shown they will represent an outlay not to be recouped by the sale of the produce removed, especially if account be taken of the cost of the intensive rigid fire-protection which the re-growth will demand

41. *Working arrangements.*—The removal of fuel and bamboo from the deciduous forests adjoining the Coimbatore district is made under permits issued by a special establishment. Elsewhere permits are distributed by the Range officers and Foresters under them for trees selected for felling in sholas for leaves, grass and for grazing.

The substitution of located fellings for the permit system is not practicable at present. So far as firewood and bamboos are concerned, the demand for the produce being comparatively small and uncertain wherever the growth in our reserves is sufficiently advanced to justify our regulating its removal by rotation fellings.

The restriction of the area over which a single permit allows cattle to be grazed is another matter which calls for consideration, though it may not be feasible pending completion of settlement to make any alteration at present in the arrangement in force whereby the payment of a grazing fee allows the cattle to graze over the reserves of the whole district. The closing of areas to grazing should only be decided upon when the condition of the

I fully concur and consider that any changes, however desirable, must be approached with caution and with due regard to long standing custom and prejudice.

(Intld.) H. T.

Collector's Remarks.

Inspection Notes.

regrowth requires it and rigid fire-protection and to prevent individual cases of hardship to village communities, the area so closed should not be so large as to preclude all accessible grazing.

42. *General protection.*—The number of forest offences reported for the district is small and has decreased in the past two years notably under the head of offences relating to grazing. This decrease has been accompanied by an increased revenue from this source. The rest of the offences with the exception of one fire case and twelve sundries, all relate to illicit removal of firewood and minor produce. The majority of the reported cases occur in the Coonoor range. It would appear that detection is easier and better here than in the Ootacamund range. The cases are of ordinary petty importance only and they should not become more numerous now that by recent Gazette notification, the public has been definitely made aware of the privileges conferred upon them by the revised rules under section 26 of the Forest Act. In the Sigur and Mudumalai ranges beyond the grazing of cattle illicitly there is no temptation to remove forest produce which has no local value.

The Assistant Accountant-General has since held his annual inspection of the District Forest office and pronounced favourably on its working. He found nothing requiring to be brought to the notice of the Board, and his report consisted merely of some suggestions on minor details communicated to the District Forest-officer.

(Intld.) H. T.

43. *General remarks.*—The District Forest-office was examined in detail and it was found in good workable order.

The Range offices of Sigur, Mudumalai, Coonoor and Ootacamund were also inspected and report thereon communicated to the District Forest-officer, as also notes of inspection of the depôts at Coonoor, Wellington and Ootacamund. Throughout the district there was distinct evidence of complete and intelligent control on the part of Mr. Douglas to whom I am indebted for most patiently explaining everything I required to learn and for securing the information which enabled me to write the account of the forests shown in the appendix.

(Signed) E. D. M. HOOPER,
Ag. Conservator of Forests,
Southern Circle.

Endorsement by H. TREMENHEERE, Esq., Acting Collector, Nilgiris, dated 23rd November 1896, Ref. on Cur. No. 187-F.

Forwarded with notes.

THE NILGIRI FORESTS.

Forest Conservancy on the Nilgiris under varying aspects and with fluctuating success has, from the first, played an important part in general administration. Long before Europeans settled on the hills, large areas occupied by Badagas had been denuded and the District Manual describes how, within a few years of the establishment of Ootacamund itself, the surrounding wood lands were threatened with ruthless destruction at the hands of the early settlers and how the authorities in vain sought to arrest the evil. Not only were efforts made to preserve valuable timber, but in the title-deeds of lands granted by Government, a clause was inserted compelling the grantees to make good, by planting, all vacancies caused by felling. In 1837, foreseeing the gravity of the consequences to the wood and water supplies, Government ordered that under no circumstances should useful or ornamental trees be cut down within settlement limits, and that no other trees should be felled without previous selection and special sanction. Thus arose and proceeded a regular contest between forethought and reckless improvidence, with the result that, in 1852, the mischief still continued. In that year was sanctioned the first Forest Conservancy Establishment consisting of a Forester and six peons and, inadequate though it was, this small staff, under the able and energetic direction of the well-known Collector Mr. Thomas, was able to do some good as will be shown further on.

Meanwhile, two interesting events had occurred, events that have led to important results already and which may be destined to exercise material influence on the future prosperity of the Nilgiris. These were the introduction, in 1840, of the *Acacia melanoxylon* and *Acacia dealbata*, and, in 1843, of the *Eucalyptus Globulus*. These trees appear to have speedily attracted notice, and through the exertions of Messrs. E. B. Thomas, McIver, Captain Campbell, Dr. Wight, Mr. J. Sullivan, and Captains Allardyce and Ouchterlony much information had been published regarding them and other suitable exotics by 1855, in which year, it is recorded, several plantations were opened in Ootacamund by private enterprise. In 1856, Captain Campbell formed the first Government plantation at Bandy shola near Wellington. About the same time or very soon after, Mr. E. B. Thomas began planting Australian trees in Ootacamund, filling up blank spaces and refilling vacancies in some sholas. At the same time, Captain Campbell's operations progressed satisfactorily and, in 1860, Mr. Thomas formed the Government plantations at Marliamund and Snowdon, which are therefore the oldest in the station, though Aramby has generally been so considered. Meanwhile private plantations had no doubt multiplied, but of these there is no trustworthy record. In 1857, Major-General Morgan is believed to have imported seed of the Blue Gum from Australia, from which he raised 150,000 plants. Of these, he planted 70,000 and distributed the rest about the hills. At this time, plants were still scarce, and private persons obtained them for the most part from the Arboretum in the Government Gardens. The ordinary price of Blue Gum plants was 12 annas each and wattles *(Acacias)* fetched 4 annas. Thus the Australian plantations had become an established success before either the Forest or "Jungle Conservancy" Department had entered the field.

To return to the history of general Conservancy. Although a small staff had been sanctioned in 1852 to strengthen the hands of the Collector, yet, as was to be expected, things were still found in an unsatisfactory state when Dr. Cleghorn, the first Conservator of Forests, reported on the Nilgiris in 1858. Plantations had got beyond the experimental stage and even the work of the preventive officers, thanks to Mr. Thomas, had not been altogether barren of results, for, the Conservator reported: "I do not hesitate to affirm with truth that but for his (Mr. E. B. Thomas') exertions, the neighbourhood of Ootacamund would have been denuded of its remaining beautiful sholas long since." Various suggestions were made in this report, but no practical result followed for another couple of years.

In 1860, at the instance of the Collector and the Conservator, Government passed a set of rules for the better protection of the Nilgiri woods and forests and sanctioned an increased establishment. Soon afterwards Major Morgan, Deputy Conservator of Forests, was placed in charge of the Nilgiri sholas, plantations, &c., in addition to the Mudumalai, Benne and Sigur forests, which about this period fell under the regular control of the Forest Department, Mudumalai being transferred from the Public Works Department and leased for 100 years from 1863 onwards from the Tirumalpad of Nilambúr, and Sigur resumed from the hands of unscrupulous contractors who had well nigh ruined the forests. At the time, however, and, in fact, until 1872, Sigur appears to have been attached to the Coimbatore forests and worked in conjunction with the Satyamangalam tracts.

The Forest Department appears to have then formed the plantations of—

Aramby.	Sheffield.	Brooklands.
Governor's shola.	Madana.	

and the forests of Mudumalai and Sigur were still exploited for the Ootacamund and Mysore markets, the former for its timber and the latter for its Sandalwood. The small Mudumalai teak plantation was also opened out by Major Morgan in 1868-69. The Benne plantation was begun shortly before the Sigur range was attached to the Nilgiris in 1872, and the Sandalwood plantation in the Northern Hay reserve was opened in 1872-73.

In 1869, after the creation of the Nilgiri Commissionership, the plateau and its plantations were handed over to the Jungle Conservancy Department with a special establishment of its own entirely under the control of the Commissioner. In September of that year, Major Jago was appointed special officer under the Commissioner with an increased establishment costing Rs 732 per annum more than formerly. The Forest Department continued its operations in the forests of Wynaad and Coimbatore, and the Jungle Conservancy Department devoted itself mainly to plantation work. It added to those already opened the plantations of—

Baikie	Huppattie.	Blackbridge.
Norwood.	Andi.	Old Forest.
Arnakal.	Cully.	Rallia.
Governor's shola (part).	Chowghat Cully.	Newman.

The area was thus raised from 191 acres handed over in 1869 to 919 acres in 1874-75, when under the orders of the Government of India the sholas and plantations were again transferred to the Forest Department, and have remained in its charge ever since. During the interval that had been passed under the control of Jungle Conservancy the revenue derived from natural wood lands had risen somewhat and their management had, on the whole, improved; but it is on record that the destruction of forests continued and their alienation under the waste land rules had, in some cases, been injudicious or excessive. Some years later, this state of things attracted notice and a Commission was appointed in 1878 to report on the whole question. Government ultimately resolved in November 1878 that no applications for shola or forest land should be entertained until the district had been fully reported on and a future policy decided. The forest operations in Mudumalai, &c., proceeded much as before, but shortly after the addition of the Sigur range in 1872, the Méttupálaiyam range was withdrawn.

On the plateau, the department proceeded to increase the area of plantations and added those of—

Chemanguli.	Koolie.	Rock.
Muthânad.	Bathri.	Tippakuchi.
Part of Arambi.	Deva shola.	Little Rallia.

It may here be mentioned that for some years the Cinchona plantations were in the charge of the Nilgiri Forest Officer.

The history of forestry in the Nilgiris has now been traced to within a few years of the time when Dr. Brandis (then Inspector-General) arrived to investigate the position and to formulate suggestions for general reorganization. On his advice, many changes were introduced, notably, the Forest Act came into force and the establishment was properly organized. During the fourteen years that have since elapsed, matters have improved and the operations of the department developed. With the exception of a comparatively small area, the forest reserves of the district have been selected, settled and demarcated; working plans, at first preliminary and more recently permanent, have been drawn up for the plantations, and the Mudumalai and Benne forests, on the advice of two different Conservators, are about to be worked under a systematic course of management. Fire protection has, to some extent, been successful, the district has been parcelled out into ranges and sub-ranges and no land can be alienated any where in the district without previous reference to the department for inspection and report.

Such is the history of Forest Conservancy as kindly sketched for me by Mr. Douglas, Deputy Conservator, the present Nilgiri District Forest-officer. I would merely add that the reservation of areas under the Forest Act has proceeded gradually subject to a policy which at first was not very clearly defined, but later on became so when the connection between our operations and the villagers' requirements had been inquired into and decided. At first, the Revenue Settlement preserved from alienation certain tracts which would inevitably have come under patta holding by the Badagas and many of these became known sebsequently as village forests. Their management was brought under discussion between 1880 and 1890, but in the latter year the Government issued an order declaring that all areas to be conserved should be settled as reserved forests. It has therefore followed that the areas in question have for the most part come under reservation and since they naturally adjoin village cultivation, their settlement has proved to be a lengthy operation.

At present the district forests are distributed over four charges known as the Ootacamund, Coonoor, Sigur and Mudumalai ranges, and this arrangement has been in force since 1882. The Ootacamund range includes the sholas, plantations and downs in Todanad and the main waste areas in the Kundahs. The Coonoor range includes the Kótagiri, Coonoor and Melur portions of the plateau, as also the slopes draining into the Bhavâni river. The Mudumalai range consists of those forests on the Wynaad plateau at 3,000 feet which are to the north and west of the Moyar river, while all to the east and south of that stream together with the northern slopes of the hills are included in the Sigur range.

The revenue and expenditure of the Nilgiri district forests since the reorganization has been as follows:—

Year.	Total.	Sub-heads.	Total.	Year.	Total.	Sub-heads:	Total.
	Rs.	*Revenue.*	Rs.		Rs.	*Expenditure.* A	Rs.
1882–83 ..	28,452	I. Timber ..	1,42,502	1882–83 ..	35,695	I. Timber by Governemnt ..	38,419
1883–84 ..	43,724	Fuel	2,23,835	1883–84 ..	42,914	Firewood do. ..	1,59,467
1884–85 ..	40,883	Bamboos ..	..	1884–85 ..	49,640	Bamboos do. ..	..
1885–86 ..	39,045	Sandalwood ..	88,244	1885–86 ..	60,612	Sandalwood do. ..	21,008
1886–87 ..	40,674	Grass, &c. ..	13,296	1886–87 ..	76,451	Grass do. ..	7,195
1887–88 ..	39,076	II. Timber ..	45,618	1887–88 ..	63,760	II. Timber, &c., by consumers, &c.	21,891
1888–89 ..	51,101	Fuel	53,525				
1889–90 ..	41,339	Bamboos ..	28,640	1888–89 ..	61,699	III. Confiscations	59
1890–91 ..	47,612	Grazing ..	39,857				
1891–92 ..	47,846	Minor produce.	13,253	1889–90 ..	66,064	V. Rent of leased forests ..	58,500
1892–93 ..	*65,340	III. Confiscations ..	565	1890–91 ..	63,530	VI. Purchase of cattle	2,300
1893–94 ..	†52,767	V. Fines	32	1891–92 ..	58,443	Feed, &c., of cattle ..	20,366
1894–95 ..	†61,464	Refunds ..	1,523	1892–93 ..	* 76,956	Stores	7,926
1895–96 ..	†69,300	Other sources ..	17,733	1893–94 ..	† 71,711	VII. Roads, &c.	25,133
				1894–95 ..	† 74,932	Buildings	17,403
				1895–96 ..	† 84,340	Other works	1,191
						VIII. Demarcation	32,511
						Forest settlement	6,262
						Surveys	3,945
						Working plans	421
						Sowing and Planting ..	80,179
						Fire protection	29,635
						Other works	12,813
						IX. Refunds	1,299
						Law charges	756
						Other do.	10,467
							5,59,146
						B	
						I. Salaries	2,65,809
						II. Travelling allowances ..	49,002
						III. Contingencies	12,784
							3,27,595
Total ..	6,68,623	Total ..	6,68,623	Total ..	8,86,741	Total ..	8,86,741

* For 15 months. † Forest year.

Revenue.—During the years immediately following the reorganization, the Revenue continued as before to be in the main derived from the sale of timber collected departmentally and of timber and fuel removed by consumers. From 1884 onward the departmental sales became much reduced, though since 1892 they have again become important. From 1884 the receipts increased from sale of fuel in depôt and departmentally, at the expense of the revenue from its sale on permit. The revenue from Sandal has of late shown some improvement but it will not for a long time attain the figures of former years. Bamboos are now removed by purchasers in yearly increasing quantities and grazing is bringing in a gradually improving revenue. It should be also noted that under Other Sources a sum of over Rs. 3,000 has been recovered for three years in succession from sale of shooting licenses. Grouping the total revenue under main heads we find as follows:—

Head.	Source	Amount. Rs.
I.	Departmentally collected produce	4,87,877
II.	Produce collected or removed by purchasers	1,80,893
III.	Confiscated produce	565
V	Other sources	19,288

Expenditure.—After the reorganization larger grants were made in the Nilgiri district, the annual expenditure on Works absorbing the forest revenue year after year until recently when receipts have been worked up under Timber and Grazing. From the following abstract it is seen that Rs. 2,10,000 have been expended on improving the forests by operations charged under A.VII. and A.VIII.

Head.	Nature of Charges.	Amount. Rs.
I.	Charges on departmental produce	2,26,089
II.	Charges debitable to produce removed by consumers ...	21,940
III.	Confiscations	59
V.	Rent of leased forests	58,500
VI.	Feed and keep of live-stock	30,592
VII.	Roads, buildings, &c.	43,727
VIII.	Demarcation, fire-protection, surveys, &c.	1,65,766
IX.	Sundries	12,422

The apparent net value of timber departmentally collected, being the excess of R.I-a. over A.I-a., is Rs. 1,04,000. But the real net profit can only be reached after deducting a percentage of establishment charges, which would so reduce the balance referred to, that the profit due to Mudumalai, would scarcely, if at all, cover the charges on it, chiefly on account of rent which amounts to Rs. 58,500, so that whatever our previous revenue from it may have been for the period under review, this forest has been a source of expense.

Of expenditure under A.VIII the main items are—Fire protection, Rs. 30,000; Plantations Rs. 80,000; Demarcation, Rs. 32,000. The plantation charges represent our extensive experiments with exotics notably the Frenela which has proved commercially unprofitable.

SIGUR RANGE.

The Sigur range is bounded on the north by Mysore from which it is separated for a considerable distance by the Moyar river, on the east by the Satyamangalam taluk of the Coimbatore district; on the south by the upper slopes of Todanad rising up to about 5,000 feet at Kalhatti and to the plateau at about 6,500 feet on the banks of the Pykara river; on the west by the forests of the Mudumalai range.

Apart from the small areas of shola growth found in the ravines on these slopes, the forests of the Sigur range may be described as a continuous deciduous growth stretching across the valley of the Moyar. Village areas are dotted here and there at a considerable distance from each other, the field cultivation being restricted to minor crops. These areas were demarcated and excluded from the reserves at the time of settlement. The inhabitants are chiefly Kasubers, who mainly depend upon the Forest department for their livelihood which they secure by bringing out forest produce. On the whole the country may be described as pastoral providing fodder not only to the local herds, but also to cattle coming in numbers from other parts of the District and Mysore at certain seasons of the year. The ordinary type of forest met with in this valley consists in the main of a sparsely distributed irregular Teak growth up to 40 feet, *Acacia catechu*, *Acacia sundra*, *Anogeissus*, *Terminalias* (chiefly *Terminalia Belerica* and *Terminalia Chebula*). Towards the ghâts and on rising ground there is also very characteristic growth of *Grewia tiliæfolia*, while bamboos of the larger kind fringe the water courses. There is also a widely distributed and important growth of Sandal along the lower slopes of the hills extending all over the plains as far as the river.

Reserves.—The following areas have specially been taken up for Conservancy under the Forest Act:—

	Acs.		Acs.
Sigur	49,484	Northern Hay	3,998
Kalhatti	5,005	Moyar	13,238
Bokkapuram	2,008	Kalmalai	896
Singara	1 970	Avaraihalla	6,425
Do. addition ...	379		

The total area of these blocks amounts to 63,403 acres, and includes most of the forest of the locality, all that remains being unimportant and the private property of estate owners or of small cultivators.

The Sigur Reserve.—This forest comprises the eastern portion of the range and spreads up the slopes of the Nilgiris starting from their base in Kodanad to Kalhatti on the Sigur ghât road; it is bounded by the Kalhatti stream until it joins the Moyar which forms its northern boundary. The area thus enclosed is traversed by the Sigur ghât road also by a cart-track running from Chockanhalli to the Mookurtti stream which was made for extracting minor forest produce. The only village areas enclosed in the reserve are Chockanhalli and Gathehutti. The reserve was notified for settlement in February 1885, May 1892 and July 1893 and finally notified as reserved forest in Board's Proceedings, No. 527, dated 9th August 1894. It is demarcated with cairns throughout, but the lines joining these latter are not all cleared, partly because they adjoin other

reserves or follow water-courses where lines are unnecessary. The expenditure under this head in the past, so far as can be gathered, has amounted to Rs. 215, and it is calculated that an additional sum of Rs. 200 will be required for the completion of the work, including cost of cairns of the new patter[illegible] Thereafter a yearly sum will be required for annual re-clearings.

This fores[illegible] been strictly conserved at any time, partly from its isolated position and also from there being no demand for the ordinary timber produce. It has, however, been a continuous source of profit from the extraction of sandalwood and minor produce as well as from grazing. The yearly gross and net revenue from sandal as far back as can be traced is shown in the margin.

Sandalwood.

Year.	Gross revenue.	Net revenue.
	Rs.	Rs.
1889-90	5,616	3,760
1890-91	11,229	9,655
1891-92	12,315	11,458
1892-93	..	..
1893-94	12,470	12,224
1894-95	5,270	4,551
1895-96	6,564	5,744

As regards sandal it is understood that absence of communication has led to the concentration of the felling to such an extent that immature wood has been cut out, while in more distant portion some larger wood could with advantage have been removed. The quality of the sandal grown is fair. Figures for other produce are not available for the reserve. The chief items of minor produce are gallnuts, deer and sambur horns, honey, wax, tamarind, sheakoy and some avaram bark.

The forest is resorted to for grazing by herds from Mysore and from the Nilgiri plateau. The income from this source is gradually improving.

The establishment directly employed on the protection of the reserve is one Forest Guard on Rs. 10-6-5 per mensem. He is stationed with a temporary watcher at Chockanhalli and it is probable that a second Guard will be requisite when sandalwood felling is carried on in the more distant portion of the forest. The works now proposed are the regulation of the sandal fellings and the completion of the demarcation.

The Kalhatti slopes reserve.—This reserve covers an area of 5,005 acres lying to the west of the Sigur river, and comprises the lower slopes of the Hills at this point as well as the plains as far as the Masnigudi road. On the west it is bounded by the Westbury estate and Bokkapuram reserve. The growth is similar to that of the southern portion of the Sigur reserve. It contains some sandal, but it is not much indented upon at present for this produce. It is traversed for a short distance by the road from Masnigudi and by a bridle-path to the Westbury estate.

This block was proposed for reservation in Board's Proceedings, No. $\frac{730}{F.141}$, dated 4th March 1885, and finally settled in notification No. 89, dated 5th March 1886.

It is demarcated with cairns and cleared lines, the cost of this operation having amounted to Rs. 213. No produce is extracted from this reserve there being at present no demand. Cattle grazing is permitted, the herds that resort to it belonging to Bâdagas from above and also from the Westbury estate and village areas in the neighbourhood. This reserve is protected by a Forest Guard living at Masnigudi. It is not proposed at present to undertake any operations in this block.

The Bokkapuram reserve.—This reserve of 2,008 acres adjoining Kalhatti on one side and Singara on the other penetrates to the plateau at one point. Its lower boundary is at the foot of the hills but does not extend into the plains. It was notified for settlement on 20th February 1885, and was finally declared reserved forest in Government Order, No. 188, Revenue, of 13th March 1886. It includes one enclosure inhabited by Kusabers, who cultivate small holdings and own a few cattle. The block has been demarcated with cairns and cleared lines at a cost of Rs. 76. It is traversed by the pathway from Bokkapuram up the slopes towards Sholur. The block is rocky and in parts precipitous. The growth is poor with some shola at the summit. There is no demand for the produce and no revenue is recovered except from grazing cattle coming from above and from Bokkapuram on the plain. The reserve is protected by the Forest Guard of Masnigudi. There are no works proposed in connection with this reserve.

The Singara reserve.—This lies to the west of Bokkapuram, and occupies a strip. a mile wide from a peak on the Nilgiris (7,200 feet) to a point well out in the plain within two miles of Masnigudi where it connects with the Singara addition. The growth above is shola, on the lower slopes there is some sandal while on the plains there is irregularly grown teak with bamboos. It was notified for settlement on 20th February 1885 and finally reserved in Government Order, No. 188, Revenue, dated 13th March 1886. It has been demarcated with cairns and cleared lines at a cost of Rs. 156. There are no roads in this reserve. It is grazed over by cattle belonging to the adjoining Singara estate and by other animals from Masnigudi. There is little demand for the produce though some minor produce is recovered and a small quantity of sandalwood extracted, the standing stock of which requires protection. No works of conservancy are proposed for this reserve at present.

The Singara addition reserve.—The small block adjoins the Singara reserve forming a continuation of it towards Masnigudi. It is traversed by the Avaraihalla stream and carries a fair growth which includes Teak *Acacias* and *Anogeissus*. It was notified for settlement in August 1893 and finally reserved in Government Order, No. 634 of 16th September 1895. It is demarcated with cairns and cleared lines which cost Rs. 156. There is no present demand for the produce though it is grazed over by cattle of the adjoining villages. It is supervised by the

Forest Guard of Masnigudi. There is no work proposed at present in connection with this reserve.

The Northern Hay reserve.—This block was notified for reservation in Government Order, No. 226, dated 20th February 1885, and reserved in Government Order, No. 888, dated 12th October 1886. It occupies the south-western corner of the range and includes the spurs of the hills to the north of the Pykara river which bounds it from the Cinchona plantations to the Moyar. It extends to the Singara reserve at its highest point. Its eastern boundary is the stream flowing to Northern Hay estate which bounds it on the north along with the Moyar reserve. On the west it is bounded by the Moyar estate and the Moyar river. On the upper level the growth is poor, the hills being precipitous, but on the lower slopes and towards the Moyar river it is more promising and thicker, a good growth of teak and jungle woods being noticeable and a decided improvement on what is found in the other reserves stretching from the slopes into the plain. This block also contains a sandalwood plantation originally made in 1872-73, over an area of 21 acres, at a cost of Rs. 1,742. It was specially protected for a series of years but eventually was declared to be abandoned as a failure and at present there are only a few trees of 18 inches in girth, in good order and promising and it is still fire protected as far as possible. This reserve was proposed for settlement on 20th February 1885 in Government Order, No. 888, dated 12th October 1886 It is demarcated with cairns and lines have been cleared around private property and wherever the river is not the boundary. The cost of this is estimated to have been Rs. 134. There is a pathway leading to the hills from the Northern Hay estate and a stream of water diverted from the Pykara river above the middle Falls also descends to the same property. No revenue is recovered from sale of produce in this block, though it is resorted to for grazing to a small extent on payment. It is looked after by the Forest Guard of Masnigudi. It is not proposed to undertake any operation in this block for the present.

The Moyar reserve.—The Moyar reserve lies to the north of the range. It forms a strip of forest extending from one end of the range almost to the other along the banks of the Moyar river. It adjoins the Sigur, Avaraihalla and Kalamalai reserves. The growth consists chiefly of Teak, *Anogeissus*, *Terminalias* (chiefly *T. Belerica* and *T. Chebula*), *Acacias*, *Phyllanthus*, *Dalbergia latifolia* and Bamboo. This block contains also a small amount of sandalwood. It was notified for settlement in Government Order, No 226, dated 20th February 1885, and finally declared as reserved forest in Government Order. No. 188, Revenue, dated 13th March 1886. It is demarcated with cairns and cleared lines. The expenditure under this head in the past has amounted to Rs. 157 and it is calculated that a very small sum will be required for annual re-clearings. There has always been a demand for dry teak which is found in small quantities throughout the reserve. The produce is removed by villagers of Mysore, who fell and drag the timber to wayside depôts where it is passed by the Range officer. The timber is chiefly required for building purposes and is generally of small scantling. The revenue realized from this source in the past three years has been as per margin.

	Rs.
1893-94	270
1894-95	352
1895-96	662

There is also revenue recovered from the minor produce found in the reserve. A departmental collection of gallnuts made last year yielded 28 maunds, but this was an exceptionally bad season. There is also some honey wax and thorns. The Forest also contain a fair amount of Blackwood and Vengai, above 6 feet girth, which it is proposed to fell. The reserve is resorted to by cattle from the Singara, Northern Hay and Leighwood estates, and also from the village Goora Gowden Hutti and other parts of the district and from Mysore.

The only road in this reserve is the Government road which runs from Masnigudi to Tippacadu on the Moyar river. No village areas are enclosed though there are a few Betta Kurumbers' huts on the banks of the Moyar. These men are solely dependent on the department for work, having no cultivation.

The establishment employed on the protection of the Moyar reserve is restricted to one watcher who lives at Masnigudi, who has in his charge the other smaller slope reserves in the range and it is also looked after by the Forest Guard who lives in Masnigudi.

Fire-protection until recently was a failure, the area being generally burnt over each year by local graziers for the purpose of improving the quality of the grass for their cattle. Of late years more systematic attempts at fire-protection have been made in the portion of the reserve north of the Masnigudi-Mudumalai road, and have been fairly successful, the block protected being bounded by the Moyar on one side, the road on another and by one of the streams joining them.

The operations proposed in this reserve are as follows:—

The removal of such large trees Vengai and Blackwood, as are fit for the market and likely to become reduced in value if left in the forest. In this connection it will be convenient to go over the forest gradually by portions each year. Meanwhile a more thorough examination of stock will enable us to prepare a rough plan for the general treatment of the reserve. It is proposed to continue the export of dry teak by consumers and to demarcate the camping grounds and to keep up the demarcation.

The Moyar addition.—This reserve situated on the banks of the Moyar was formerly excluded from the main reserve, but henceforward it may be considered as part of it. The

addition was notified for settlement in Board's Proceedings, Forest No. 409, dated 23rd July 1886, and became reserved forest in Board's Proceedings, Forest No. 185, dated 29th March 1887.

The Kalmalai reserve.—This is a similar addition to the main Moyar block to the south-west of Masnigudi on both sides of the road leading to the Northern Hay estate. It contains a thin growth of teak, *Terminalias*, *Acacia catechu* and bamboos. In the centre is an enclosure demarcated out of the reserve wherein certain Kusabers cultivate ragi and gram and also graze cattle. It is demarcated with cairns and cleared line which cost of Rs. 155.

The Avaraihalla reserve.—This block, to the east and north of Masnigudi, covers an area of 6,425 acres on both sides of the Avaraihalla stream between the Sigur and Moyar reserves which it adjoins. It was notified for settlement on 17th July 1893 and declared Reserved Forest in Board's Proceedings, Forest No. 52, dated 9th July 1894. Within the reserve are the sites of villages deserted long since. The growth is poor throughout and, in this respect inferior to that of Sigur and Moyar. The trees represented are *Acacia*, *Anogeissus*, and inferior teak, seldom exceeding 25 feet in height also some sandal along the stream. It is demarcated with cairns and a cleared line, the cost having been Rs. 227. This reserve is traversed by the high road from Sigur to Tippacadu for a distance of two and-a-half miles in its southern portion where it adjoins the Singara addition reserve and nearly touches the Kalhatti slopes reserve. No timber is extracted from the block, but a very small quantity of bamboos for local consumption is taken out, also gallnuts. It constitutes a favourite grazing-ground for Masnigudi cattle. It is not intended to execute any works in this reserve at present.

From the foregoing remarks it is evident that in the immediate future work will be only carried on in Sigur and Moyar reserves, though minor produce collections will extend to the smaller blocks out in the plain and some sandalwood may be cut out from the lower levels of the Nilgiri slopes.

The grouping of the reserve blocks of this Range into Working Circles may be carried into effect at once, taking into consideration the geographical portion, their general nature of their stock and the demand for their produce.

The reserves would thus be grouped as follows :—

Sigur Working Circle.

	ACS.
Sigur reserve	49,484

Moyar Working Circle.

Moyar reserve	13,239
Do. addition	342
Kalmalai	896
Singara addition	379
Avaraihalla	6,425

Hill Working Circle.

Northern Hay	3,998
Singara	1,970
Bokkapuram	2,008
Kalhatti	5,005

Sigur Working Circle.—Until a demand arises for the produce grown in this circle towards the Moyar river, our efforts will be chiefly directed to the extraction of mature or dying sanda and the roots of trees already removed. Some arrangement for the systematic conservation of this species must be devised and the sandal-producing area should be divided off from the rest of the reserve, selecting for this purpose, a base line which will form a convenient cart-track from which compartment lines will extend towards the hills. In these compartments fellings will be eventually made in rotation. Each area gone over should be brought under rigid fire-protection. Minor produce collections will continue, the demarcation completed and general protection enforced. A temporary depôt and rest camp for sandal work will be constructed on the cart-track from Chockanhalli to Sirur and this is proposed for early execution. It is possible also that a rest-house for an inspecting officer will be required about the middle of this reserve and lines of communication will have to be opened when the forest has been more studied. For these works two forest guards will be required, one stationed at Chockanhalli and the other at Sirur and for our labour we shall depend on the Kusabers who live at Chockanhalli, Goora Gounden Hutti and Gathehutti. The annual revenue estimated from this Working Circle is Rs. 5,500, made up of Rs. 4,000 from sandal, Rs. 1,000 from grazing and Rs. 500 from miscellaneous sources. The return from sandalwood will be decreased after three or four years and the produce thereafter average from 2 to 4 tons per annum and it is hoped that the deficiency will then be made up by our receipts from timber, &c. The chief expenditure incurred will be on the line clearing for the sandalwood compartments, their rigid protection when cut over and once the final demarcation of the reserve is complete, on the annual re-clearings. An annual sum will be requisite also for the roads and buildings referred to.

Moyar Working Circle.—The produce extracted from the Moyar Working Circle at present consists of dry teak removed by purchasers to Mysore, the minor produce consisting of gallnuts. The revenue from these sources amounts to Rs. 1,600, to which must be added the receipts from grazing amounting to Rs. 700. The operations to be carried out are the removal of full grown valuable trees which are anticipated to increase our revenue to the extent of Rs. 2,000 at a cost of Rs. 500, so that roughly speaking we may expect a return of Rs. 4,000 from the Circle. The object of our operations will be the improvement of the growth so soon as we have an accurate record of its present state and this cannot be defined at present with any accuracy. The area now under fire-protection must be specially examined to trace any good results that may have been obtained and the operation should be more rigidly carried out in this particular area. The expenditure of this Working Circle will amount to from Rs. 500 to Rs. 1,000 per annum including the cost of fire-protection, selection fellings, re-clearing of lines. This Working Circle can best be supervised from Masnigudi, the head-quarters of the range, where the officer in charge and forest guard will both live. It might be advisable to substitute a watcher at Masnigudi and transfer the forest guard to Goora Gounden Hutti, which is an enclosure between Avaraihalla and Moyar, near the river.

The Hill Working Circle.—Our work connected with the reserves forming this circle will at present be limited to general protection and the formation of sandalwood compartments from each of which in rotation dried trees and roots should be removed, the operation being followed by rigid fire-protection and exclusion of cattle for at least several seasons. The revenue to be derived from the Circle will not exceed Rs. 1,000. Subsequently it may rise from an increased supply of sandal and timber from Northern Hay to Rs. 3,000 per annum while the expenditure directly debitable will probably extend from Rs. 200 to Rs. 1,000. In this connection, it may be noted that it will be unnecessary to keep a broad line cleared between adjoining reserves except as isolating fire lines or compartment lines later on. This Working Circle can well be supervised by the guard at Bokkapuram where a hut should be made for his residence. The Kalhatti guard is mainly employed on the Ootacamund plateau, his chief work for the Sigur range, being the check of cattle grazing. It is for consideration whether it could not be better supervised from the Ootacamund range.

Sigur Range.—The revenue and expenditure of the range for the past two years has been as follows :—

Heads.	Revenue. 1894–95.	Revenue. 1895–96.	Heads.	Expenditure. 1894–95.	Expenditure. 1895–96.
	RS.	RS.		RS.	RS.
I. (*d*) Sandalwood	5,271	6,564	A. I. (*d*) Sandalwood ..	719	820
(*e*) Minor Produce	336	531	(*e*) Minor Produce ..	312	113
II. (*a*) Timber	562	809	II. Timber, &c. ..	287	286
(*b*) Fuel	31	36	VII. (*a*) Roads	..	60
(*c*) Bamboos	100	113	(*b*) Buildings	203	100
(*d*) Grazing *	1,473	2,361	(*c*) Other works ..	..	20
(*e*) Minor Produce	184	341	VIII. (*a*) Demarcation ..	642	394
III. Confiscations	53	..	(*e*) Planting	1	..
V. (*c*) Other sources	1,304	775	(*f*) Fire-protection ..	288	310
			IX. Other charges ..	906	649
			Total, A ..	3,358	2,752
			B. I. (*c*) (*d*) } Salaries	960	835
			II. (*c*) Travelling allowances	140	125
			III. (*e*) (*f*) } Contingencies ..	20	51
			Total, B ..	1,120	1,011
Total, Revenue ..	9,314	11,530	Total, A and B ..	4,478	3,763

* The revenue under R. II. (*d*) is recovered from issue of permits which allow grazing throughout the district.

MUDUMALAI RANGE.

This range occupies the north-western corner of the Nilgiri district and is bounded by Mysore, the Malabar district, the Moyar river and the Ouchterlony valley. It forms part of the Wynaad plateau and in parts the country is fairly level though hills rise in all directions to heights of a few hundred feet and in some cases attain a considerable elevation. It is essentially a forest region extending into Malabar and Mysore and it is not much frequented. The main areas included in this range are the Mudumalai and Kumbarakolli leased forests treated as Reserved lands under the Forest Act, comprising together an area of 49,056 acres and the following Reserved forests :—

	ACS.
Benne	10,317
Do. addition	724
Gadabrook	230
Ammankaval	563
Cherambadi	1,983

Further reservation is under contemplation in South-East Wynaad, the names and probable areas of blocks being as follows :—

	ACS.
Rockwood	928
Cherambadi addition	2,107
Ammankaval addition	2,330

The Mudumalai forest.—This was originally held on a lease for 99 years from 1st October 1863 on a yearly payment of Rs. 3,500 to the Nilambur Tirumalpad. This was revised in 1891 to include an additional tract of 3 square miles in extent to the south-east. Some of the conditions contained in the previous agreement were modified or cancelled and a fresh clause inserted agreeing to the renewal of the lease for 50 years after the expiry of the original period in 1962, the rent being raised to Rs. 4,500 a year.

The boundaries of this forest are as follows :—

North.—The Mysore territory.

South.—Gúdalur desam, Sree Madura desam and Cherumali desam.

East.—The Mysore territory and Todanad boundary.

West.—Boundary of Mumad amsam and the Malabar district, Wynaad taluk, Ganapathy Vattan amsam.

The boundaries of the Kumbarakolli extension are—

North.—The Pithurhulla.

South and East.—The Moyar river.

West.—Settlement Nos. 4 to 8, 9, 10 and 11 of Gúdalúr desam.

All that is known of the early working of this forest as well as its condition is recorded in the inspection reports by Mr. Gamble, Conservator of Forests (Board's Proceedings, Nos. 271 of 27th January 1885 and 48 of 1st February 1887) ; by Mr. Cherry, Conservator of Forests (Board's Proceedings, No. 827 of 7th December 1893) ; by Mr. Popert (Board's Proceedings, No. 174 of 4th April 1895). The first attempt at regular working was proposed by Mr. Gamble on the occasion of his first visit but, for various causes, the intensive working which he prescribed was not carried out except in a very slight measure. Mr Popert's suggestions have now to be given practical effect to. The forest occupies the north-east corner of the range and projects northward towards Mysore. In fact the northernmost part including a portion of the block under strict conservancy is claimed by Mysore, and the matter is awaiting enquiry at the hands of a joint Commission. The forest is traversed along the south-east by the Local Fund road from Gundulpet to Gúdalúr and where this road enters the forest, another is projected across the forest in the direction of Benne and Sultan's Battery, and again where the Gundulpet road reaches the Moyar, a second forest road proceeds in a north-westerly direction and joins the main road already mentioned towards the middle of the forest 2 miles before arriving at Mudumalai. A cleared right of way exists from the forest road beyond Mudumalai in a south-west direction to a private estate occupied by Mr. Church. The forest has not been demarcated except by the Revenue Survey stones. It is inhabited by a few Chetties who cultivate under patta from the Nilambur Tirumalpad and graze their cattle by permission throughout the reserve. There are also some Jain Kurumbers and Betta Kurumbers in the forest who are mainly dependent on the department for their livelihood.

The whole of this forest is in parts fairly level with numerous small hills some of them steep ; it is permeated by small streams which in places form swamps. The higher grounds are gravelly with little soil, and the growth is deciduous and poor. On the hillocks and in portions where the soil is moister and richer, the forest growth is tall and until recent years included a very rich crop of large teak, blackwood and vengai. Such trees of this class as remain are in the out-of-the-way places south and south-east of the forest, though some few are still to be found in the north-west.

Apart from the timber there is but little produce removed. Gallnuts which are bought from the Kurumbers are sold with similiar produce from the adjoining forest at Benne to a contractor who purchases it by tender, the collections being weighed were about lbs. 15,000.

The point at which Mr. Gamble proposed that our regular operations should commence is the Eastern extremity including the block called Marigudi and he divided off on the map ten blocks aggregating about one-fourth of the forest. These were to be worked over in rotation during the ensuing ten years ; but difficulties supervened and Mr. Popert has lately advised that only the main principles of Mr. Gamble's place should be enforced. It is now ordered that fellings should

be carried on block by block, cutting out all good trees over 6 feet in girth and all unpromising ones over 3 feet. The present condition of the forest is by no means uniform, and apart from the absence of large trees due to the heavy fellings during the past years of the lease and even at an earlier period there is a very considerable portion of the leased area which, from poverty of soil, appears hardly capable of growing large material. If, therefore, we limit our operations to the improvement cuttings in blocks by rotation, the yield in some seasons will be very small while timber will be dying in other portions of the forest. To prevent loss of timber it will be expedient to continue the extraction of mature saleable trees wherever they are to be found. In doing so we shall not in any way interfere with the sanctioned plan devised by Mr. Gamble and endorsed with modifications, by Mr. Popert while we shall secure a yearly return in revenue for some years which will be a set off to the yearly rent and go towards covering any deficit caused by the improvement fellings and the rigid protection which the young re-growth will demand.

In the event of delay in disposing of the boundary dispute with Mysore it will be advisable to treat the area under discussion as a separate block.

To the north-west of the Mudumalai forest settlement there is a teak plantation covering an area of 27 acres originally planted by General Morgan and it is now fully stocked with poles from 1 foot to 2 feet in girth, but the trees are slow growing and give little promise of return for the expensive cultivation they have been afforded. The plantation has been fire-protected not always with success. It has also been pruned, but the operation has had no good result. There is a forest station at Mudumalai consisting of rest-houses for the District Forest-officer and Range officer and Guards with the necessary out-houses around the main building ; the compound is planted up with mahogany, Grevillea and teak. The range quarters need improvement.

At Tippacadu is a Local Fund rest-house in the forest and a station for the six elephants employed on timber works in this range.

The establishment consists of—

Two Forest guards at Tippacadu.
One Watcher at Thorapalli.
One Forest guard and one watcher at Mudumalai.
One Reserve watcher at Tippacadu.

Benne reserved forest.—This was notified for settlement by Government Order, No. 324, Revenue, dated 14th March 1885. It is situated to the west of Mudumalai on the borders of the district and joined to reserved forests in the Malabar district. The forest contains a series of small enclosures, and it is bounded on the south by the high road leading from Sultan's Battery to Gúdalúr. It was originally demarcated with cairns and cleared lines, but the boundary has become obliterated. There is one settlement of Kurumbers within it cultivating at the will of the department.

This may be described as a forest of teak, vengai, ven-teak and blackwood. It is traversed by water-courses which are fringed with a growth of bamboos which extends to a distance away from the streams which flow into the Nulpoya river in the Malabar district.

At present we are extracting about 16,000 cubic feet of mature timber from this forest, chiefly vengai and ven-teak with also some blackwood the supply of which is failing. The minor produce is collected, gallnuts, honey and wax being sold with that from Mudumalai.

The forest is traversed by a road which connects Mudumalai with the Benne forest station and various nullahs are bridged. There is also a rough track which connects Peepigathe on this road with Muthanga in Malabar.

Mr. Popert reported on this forest in Proceedings No. 174 of 4th April 1895 ; he advocates our splitting it up into blocks and compartments and executing improvement fellings in them by rotation as in Mudumalai.

In 1893 an experimental block was selected covering 78 acres and situated on a forest clad slope facing north. Lines were cleared and plants put out from a nursery 30 feet × 15 feet, the species chosen being teak and mahogany ; but most of the plants have died and are this year being replaced. It has been fire-protected, and though the seedlings planted out have not been successful there is a good stock of naturally sown vengai which has taken hold of the ground and is worthy of further protection.

There is also a teak plantation covering 40 acres, planted originally by General Morgan. The trees have not made much progress and give no promise for the future. This is also fire-protected at a cost of Re. 1 per acre per annum. It has also been pruned and thinned, but the operations have had no good result.

The Kurumbers have been induced to plant their cultivated areas with seedlings of valuable species and in this way a commencement has been made of introducing the Burmese system advocated by Mr. Popert. The area was inspected in July 1896, and though the seedlings were small they are healthy. The next year a larger area will be taken up. These Kurumbers will not require to again occupy this special locality planted up, their system being to break new ground only in bamboo jungle.

At Benne the head-quarters of the range is a forest station which contains a serambi built for the District Forest-officer, a large elephant-shed, huts for the establishment and a serambi for the Range officer, but the situation of the latter is low-lying and unhealthy and fresh buildings are necessary.

The establishment consists of—
One Forest guard at Benne.
One Reserve watcher at Benne.
One Plantation watcher at Benne.

The rest of the forests of this range are situated in the South-east Wynaad and consist of smaller areas which are, as stated, now being taken up for settlement. These areas are situated in a cultivated country and include numerous hillocks with deciduous forest including blackwood, wild jack, vengai and bamboos. They are resorted to by local cattle for grazing. Hitherto but little revenue has been recovered from them. Occasionally single jack trees have been applied for for ferry-boats. Much attention has not been paid to these forests has yet, pending the completion of settlement and also because of the absorbing nature of the works in Benne and Mudumalai. Two Forest guards are employed on their protection and they are stationed at Cherambadi and Ammankaval.

The offences reported in this range are few; the returns for the past three years showing in all 22 or only 7 each year. Of this total, 8 were concerned with the illicit removal of produce, 12 with grazing (of which 10 in 1893–94) and 2 others of a miscellaneous character. Surrounded as our forests are by those of others, petty produce has no local value.

The operations that have to be conducted in this range at the present time are as follows:—
Timber works in Mudumalai and Benne.
The improvement felling in the selected compartments of Mudumalai and Benne.
The improvement of the Benne station and its water-supply.
The fire-protection of the improvement felling compartments.
Freeing the re-growth in them by a series of clearings.
The upkeep of the roads
Supply of plants for tuckles.
The demarcation and settlement of the South-east Wynaad blocks.

The Revenue and Expenditure for the past two years of the Mudumalai range were as follows:—

Budget Sub-heads.	Revenue. 1894-95.	Revenue. 1895-96.	Budget Sub-heads.	Expenditure. 1894-95.	Expenditure. 1895-96.
	Rs.	Rs.		Rs.	Rs.
Departmental working—			Departmental working—		
Timber	15,715	17,406	Timber	2,831	3,301
Grass and other minor produce.	4	..	Grass and other minor produce.	1	167
Removed by purchasers—			Removals by purchasers	376	379
Timber	2,596	46	Rent of leased forest	4,500	4,500
Fuel	28	8	Purchase of cattle	2,300	..
Bamboos	86	39	Feed and keep of cattle	2,221	2,631
Grazing and grass	248	264	Plant, tools, &c.	82	31
Other minor produce	725	157	Roads and bridges	520	1,211
Other sources	1,923	905	Buildings	228	361
			Other works	75	298
			Demarcation	33	122
			Surveys	11	..
			Sowing and planting	233	284
			Fire-protection	485	963
			Other works	310	339
			Other charges	875	649
			Total	14,581	15,236
			Salaries	2,081	1,936
			Travelling allowance	467	800
			Contingencies	49	167
			Total	2,597	2,903
Total	20,425	18,820	Grand Total	17,178	18,139

There has been only a slight profit of late years and it is probable that this will not be maintained when our selection fellings come to an end and improvement fellings and rigid fire-protection are in full swing.

OOTACAMUND RANGE.

This range comprises the Ootacamund settlement, the Kundah division, and the Todanad excluding the village of Masnigudi. It is bounded on the north by the Sigur range, on the west by the Malabar district and the Ouchterlony valley, on the south by the districts of Malabar and Coimbatore and by the Coonoor range, and on the east by the Sigur and Coonoor ranges.

The areas under conservation are as follows:—

In the Ootacamund Settlement.

Block.	Area in acres.	Number and date of Government Order, Revenue Department, sanctioning settlement.	Number and date of Government Order, Revenue Department, reserving forest.	Remarks.
Arambi	430	No. 589-A, dated 12th May 1883.	No. 1407, dated 18th December 1884.	Plantation.
Therma tope	64	No. 42, dated 11th January 1884.	No. 322, dated 14th March 1885.	Do.
Marliamund	75			Shola.
Brook lands	177	No. 589-A, dated 12th May 1883.		Plantation.
Doddabetta I	328	No. 42, dated 11th January 1884.	No. 478, dated 28th April 1885.	For final demarcation.
Do. II	462		No. 694, dated 11th August 1886.	
Elkku	77		No. 478, dated 28th April 1885.	
Kotagiri trace I	20			
Do. II	32			
Doddahallu	43			
Mainalai	115			
Nergodumund	55	No. 83, dated 20th January 1885.	No. 1075, dated 21st September 1885.	
Fairlawns I	88			
Do. II	17			
Madana	31			
Craigmore	299	No. 42, dated 11th January 1884.	No. 478, dated 28th April 1885.	
Wood cock I	5	No. 83, dated 20th January 1885.	No. 1075, dated 21st September 1885.	
Do. II	11			
Do. III	8			
Lovedale, east	201	No. 42, dated 11th January 1884.	No. 478, dated 28th April 1885.	
Do. west				
Bilikal road	25	No. 966, dated 8th November 1886.	No. 476, dated 29th May 1891.	
Cairn hill	405	No. 589-A, dated 12th May 1883.	No. 1321, dated 1st December 1884.	For final demarcation.
Marliamund	17			
Bathri shola	34	No. 42, dated 11th January 1884.	No. 322, dated 14th March 1885.	Do.
Munjinikorai	17			
Snowdon	1,053		No. 478, dated 28th April 1885.	Do.
Fern Hill shola	10	No. 966, dated 8th November 1886.	No. 476, dated 29th May 1891.	Do.
Baikie and a portion in Nanganad.	176	No. 83, dated 20th January 1885.	No. 1075, dated 21st September 1885.	Do.

It is proposed that the reserved forests shall include an addition to Craigmore, some portions of the Wenlock Downs within the settlement and two further additions to Doddabetta, one of which covering 74 acres has been already declared reserved land.

A large proportion of the Snowdon, Craigmore, Brooklands and Lovedale blocks are purely grass land. The rest of the reserves are sholas, except where the natural growth has been replaced by planted exotics. The regular treatment of these sholas was arranged for by Mr. Gamble, Conservator of Forests, who desired to execute thinnings and creeper-cuttings, but the proposal gave rise to discussion which terminated by orders being given to carry out creeper-cuttings only. This was given general effect to and in all the blocks except Fairlawn and Lovedale.

The shola growth is fairly identical throughout, and is fully described in Mr. Gamble's inspection note published in Board's Proceedings, Forest No. 447, dated 5th August 1887, which also enumerates the more important species represented.

There is no timber extracted from these forests and beyond the receipts from plantation fuel, the only revenue recovered is from grazing which is permitted on payment in all the blocks except the planted portions and the western side of Snowdon which is kept to protect the water supply. Grass is also removed on permit at the rate of ¼ anna per head-load and firewood from the demarcated lines is also removed in the same manner at the rate of one anna per head-load. The works in progress in this portion of the range are the completion of the demarcation, the cuttings in plantations and the manufacture of a portion of the yield into charcoal as well as the general distribution of the produce.

The Todanad division includes the Ootacamund settlement, the Sigur range and adjoins the Kundahs, (Kundanad) and Coonoor ranges.

The areas under conservation are as follows :—

Block.	Area in acres.	Number and date of Government Order, Revenue Department, sanctioning settlement.	Number and date of Government Order, Revenue Department, reserving forest.	Remarks.
Kurumund	1,552	No. 226, dated 20th February 1885.	No. 1407, dated 18th December 1884.	
Kadcoopa	1,622		No. 188, dated 13th March 1886.	
Nunjanad	915	No. 589-A, dated 12th May 1883.	No. 426, dated 15th May 1893.	For final demarcation.
Red Hills	48	No. 208, dated 19th March 1890.	No. 53, dated 15th January 1892.	
Porthimund	6,983	No. 55, dated 21st January 1893.	No. 350, dated 19th May 1894.	
Sandynalla	818	No. 226, dated 20th February 1885.	No. 188, dated 13th March 1886.	Do.
Naduvattam I	3,411			
Do. II	67			
Do. III	30	....	No. 693, dated 16th July 1887.	
Ouchterlony	973	No. 226, dated 20th February 1885.	No. 188, dated 13th March 1886.	
Bellevue I	30			
Do. II	60			
Ebanad	571		No. 697, dated 11th August 1886.	Do.
Do. extension	222	No. 76, dated 29th January 1894.	No 630, dated 30th August 1894.	
Bikkapathi	1,945	No. 952, dated 4th November 1893.	No. 518, dated 18th July 1894.	
Chinnakunnur	14	No. 949, dated 3rd November 1893.	No. 457, dated 29th June 1894.	
Kengal	14		No. 408, dated 9th June 1894.	
Kully	71	No. 589-A, dated 12th May 1883.	No. 1407, dated 18th December 1884.	Do.
Governor's shola	33			Do.
Ulnad	838	No. 226, dated 20th February 1885.	No. 188, dated 13th March 1886.	Do.
Kengodu	451			Do.
Yemmaikal	464			Do.
Mukurti	1,324			Do.
Pichelbettu	1,668			Do.
Karedmund	276	No. 208, dated 19th March 1890.	No. 145, dated 13th February 1892.	Do.
Pykara	844	No. 589-A, dated 12th May 1883.	No. 1407, dated 18th December 1884.	Do.
Muthanad	420	No. 589-A, dated 12th May 1883.	No. 322, dated 14th March 1885.	Do.
Jakuntha	373		No. 318, dated 5th May 1886.	Do.
Honnathalai	320		No. 188, dated 13th March 1886.	Do.
Terrace No. I	21	No. 226, dated 20th February 1885.		Do.
Do. No. II	55			Do.
Karpakan	391			Do.
Vellingiri	643		No. 188, dated 13th March 1886.	Do.
Nilgiri peak	5,962			Do.
Carritt shola	268			Do.
Denamalai	229			Do.
			No. 367, dated 27th May 1890.	Do.

To complete reservation, a possible extension will be made to include the areas mentioned in the margin. All of these have been preliminarily demarcated with flags on pegs except the Downs which are now being taken in hand.

Paghalamund.	Therkadumund.
Hathikal.	Doddahulla.
Kalhutty road.	Okkashola.
Sandynalla extension.	Karakanmund.
Mudithanamund.	Wenlock Downs.
Devalahulla.	

The working circle hitherto known as Governor's shola includes various plantations of Eucalyptus and Acacia known as Cully, Chowghat Cully and Governor's shola No. II, and the Ulnad reserve comprising others known as Governor's shola No. I, Huppatti, Andi, Sheffield, Krurmund and Anakal. The Muthanad reserve also includes a similar plantation.

The constitution of the remainder is shola and grass land in the proportion of about two acres of grass to one of forest. Fellings are not permitted, but permits are issued for dry Strobilanthes at ¼ anna or ⅛ anna according to locality. Grazing is paid for and allowed throughout. Fodder grass is removed on head-loads at ¼ anna and ⅛ anna is charged per head-load of thatching grass. Minor produce is collected including a small quantity of gallnuts.

The works in progress in this portion of the range are the plantation fellings, the distribution of produce and demarcation.

The Kundahs.—This portion of the range adjoins Todanad, Merkanad and the Malabar district and includes the following areas of forest land under conservation :—

Block.	Area in acres.	Number and date of Government Order, Revenue Department, sanctioning settlement.	Number and date of Government Order, Revenue Department, reserving forest.	Remarks.
Kundah	40,540	No. 528, dated 5th May 1885.	No. 978, dated 12th November 1886.	
Do. (additions)	2,126	No. 435, dated 27th April 1892.	No. 328, dated 9th May 1894.	
Begulihalla	46	No. 208, dated 19th March 1890.	No. 53, dated 15th January 1892.	For final demarcation.
Hiriashige with addition ..	3,026	No. 528, dated 5th May 1885, No. 447, dated 4th May 1892 and No. 495, dated 8th June 1893.	No. 978, dated 12th November 1886 and No. 355, dated 21st May 1894.	
Yeddakadoo	116	No. 208, dated 19th March 1890.	No. 53, dated 15th January 1892.	Do.
Thai shola	1,551	No. 528, dated 5th May 1885.	No. 978, dated 12th November 1886.	Do.
Mickaroobetta	1,094			

It is also proposed to reserve three other areas known as Bellarumbuhalla, Mullimalai and Keraipadu, and their preliminary demarcation will now be taken in hand.

The main area—the Kundahs—covers an uninhabited tract of grassy hills in the south-west of the Nilgiri plateau. Many of the hills are treeless, others towards Nunjanad have sholas covering their more sheltered portions, while in the interior of the tract is a sparse growth of isolated Rhododendrons. The whole forms an immense grazing ground resorted to on payment by herds of Badaga cattle from the adjoining nads. Hitherto, our work has been confined to the shola growth in the neighbourhood of Avalanche, and as a result of our efforts to protect it from fire and cattle, it has shown a decided tendency to improve and spread.

Apart from the grazing, there is but little revenue recovered from this part of the range. Some few jungle trees are sold for building purposes and dry strobilanthes and thatching grass are removed on permit. The only works in progress are demarcation and protection.

The grouping of the Ootacamund range reserves into working circles is proposed as follows :—

The plantations in and around the settlement have been temporarily grouped into three working circles.

(i) The larger areas known as Aramby, Cairn Hill, Brooklands, Muthanad and Fern Hill plantations have been attached to Elk Hill, Lovedale (East and West), Manjakadu, Fairlawns, Bathri shola and Nergodumund, which are sholas situated in their vicinity and therefore protected by the same subordinate establishment. This would be named the Cairn Hill working circle.

(ii) The plantations known as Therma tope, Snowdon, and Marliamund, being situated apart from others and likely to supply a different market, are grouped along with Marliamund, Bilikal and the rest of the Snowdon reserves into a working circle provisionally known as the "Snowdon circle."

(iii) The plantations to the south-west of the settlement known as Baikie, Cully, Chowghat Cully, Governor's shola, Sheffield, Andy, Uppatti, Anakal and Madanad have been grouped with reserved blocks known as Pichalbettu, Ulnad, Krurmund, Mukurti, Kadcoopa, Red Hills, Nanjanad and Porthimund into a working circle known as "Governor's shola circle."

The proposed Pykara working circle will comprise the area proposed for notification as the Downs reserve excluding Brook lands and the Governor's shola blocks. This will include the reserves known as Pykara, Kengodu, Sandynalla, Yemmaikal, Keradmund, and the separate blocks known as Karpakan and Vellingiri. The Muthanad plantation is in the proposed Downs reserve, so also is the Chemanguli plantations. The latter will undoubtedly remain in the circle as it will be worked independently of the other planted blocks, but the definite placing of Muthanad in the Pykara or the Cairn hill working circle will be determined only when the working plan of the plantations is finally sanctioned.

The Naduvattam working circle comprises all the reserves along the west of the plateau to the west of the Pykara river from Mukurti to the Moyar. It will include the marginally-noted reserves.

Carritt shola.	Naduvattam (enclosing Government Cinchona plantation).
Nilgiri Peak.	Naduvattam sholas I and II.
Ouchterlony.	Devamalai.
Terrace I and II.	
Bellevue I and II (under exchange by addition to Carritt shola).	

The Doddabetta working circle comprises the blocks to the east of the Coonoor road, viz., Craigmore, Doddabetta and its various additions, Woodcock I, II and III, Doddahulla I and II, Mainhalli, Honudhalli, Jakunthu and Kotagiri traces I and II.

The Ebanad working circle will comprise the blocks known as Ebanad with its addition, Kunur, Kengal and Bikkapathimund.

The Kundahs working circle comprises the reserved areas situated to the west of Merkunad, and includes the blocks known as the Kundahs and additions Taishola, Mikara Bettu, Heriashige and additions, Bigulihalla and Yeddakadu.

The Cairn Hill working circle is composed of bluegum plantations and sholas, some grass land being included in the latter. The history of the plantations is elsewhere recorded, and they have been worked hitherto under a plan known as Mr. Gamble's dating from 1884. In 1895 Mr. Tireman, Assistant Conservator of Forests, was employed on preparing a more comprehensive plan for their treatment and this is now under consideration. They are included with the exception of Muthanad, Brooklands, Fairlawns I and II within the limits of the Ootacamund Municipality, and are therefore assessed to rates.

Apart from the working of these fuel plantations and their protection from fire, the operations connected with the conservancy of the reserved blocks in this circle are restricted to the protection of their boundaries which are all defined by cairns, trenches and cleared lines, and the prevention of felling and grazing other than on permit in all but the planted blocks. The revenue from this latter source is considerable, but it includes the fees recovered from grazing Ootacamund herds which go the Wynaad portion of the district. The permits for felling are issued in Ootacamund and allow of the removal of drywood and harmful undergrowth, such as strobilanthes, and from this source a revenue of about Rs. 40 per annum is recovered.

The annual expenditure other than cost of fellings and depôt charges likely to continue is that on the upkeep of boundaries. Fire-protection of the plantations is estimated to cost Rs. 200 annually. The establishment employed at present is one forest guard living in a Government hut at Cairn Hill, and one in a similar hut at Aramby. One watcher is stationed at Lovedale, and it is considered that an additional watcher is needed for the protection of Aramby.

The Snowdon working circle is composed of blue gum and *Acacia* plantations, large areas of sholas and grass land being included. Mr Tireman has prepared the working plan for the treatment of these plantations which will probably be worked for the supply of firewood and charcoal to Government house and offices. The plantations chiefly lie within the Ootacamund Municipality and therefore come under assessment. Work in this circle includes the upkeep of the boundaries which are all defined by cairns and cleared lines and their protection from fire as well as from illicit felling and grazing which is allowed on permit in all except the plantations and a part of Snowdon reserve which has been closed for maintaining the supply channel of the Ootacamund town. A small revenue is also derived from the sale of fodder grass.

The upkeep of boundaries is likely to cause a small annual expense, and the fire-protection of Therma tope and Marliamund will probably cost Rs. 50 per annum. The establishment employed at present is one guard living in a forest hut at Snowdon and it is considered that an additional watcher is needed.

The Governor's shola working circle is composed of blue gum and acacia plantations and very extensive areas of sholas and grass land. These plantations have been worked under Mr. Gamble's plan solely for charcoal manufacturing. Mr. Tireman has prepared a fresh working plan in 1895 for the treatment of these plantations. Apart from the working of the fuel plantation for charcoal and their usual protection from fire, the operations connected with the conservancy of the reserved blocks in this circle will include the erection of stone cairns trenches and cleared lines where necessary along the district boundary, and the prevention of felling and illicit grazing. The revenue from the blocks in this circle in 1895 was Rs. 7,086 recovered as follows:—

	Rs.
Revenue from charcoal	5,727
" from other sources including firewood	1,359
Total ...	7,086

The annual expenditure anticipated is for the upkeep of boundaries and the fire-protection of the planted areas and sholas, the grass land surrounding them being burnt every year. The establishment employed at present is one guard living in a Government hut at Governor's shola, but two additional watchers are needed.

The Doddabetta working circle comprises indigenous sholas and grass land. No operations are being carried on in this circle. The Doddabetta reserve includes the Cinchona plantations, as mentioned in the notification under section 16. The revenue realized on fodder, dry fuel, grazing, &c., amounted in the past year to Rs. 105 against an expenditure of Rs. 309. A revenue of Rs. 150 may be realized on the same heads during the current year against an expenditure of Rs. 250. The present establishment consists of only one forest guard living in a forest hut and no further expenditure is at present justifiable.

The Kundah working circle is composed of large areas of grass land and some sholas much exposed to wind. Permanent demarcation is complete for most of the Kundahs, Heriashige and Yedakadoo but not along the district boundary. It is probable that the preliminary demarcation of the proposed extensions will be completed this year. The revenue is mostly recovered

from cattle resorting for grazing to this portion of the country from Badaga villages during the dry season. In the past year a revenue of Rs. 140 was recovered against an expenditure amounting to Rs. 559 as follows:—

	Rs.
Demarcation, &c.	415
Pay of guard	144
Total ...	559

The establishment is one forest guard living in a forest hut at Bikkatti, but unaided he cannot protect the vast area of the circle.

The Pykara working circle is composed mainly of sholas and grass lands. The twenty-seven acres of blue gum known as the Chemanguli plantation lie within the Pykara reserve, but it is exposed to the full force of the wind and every year windfalls occur and it is probable that it will be abandoned as a plantation later on.

The only revenue in this circle is recovered from sale of dry firewood, fodder, and thatching grass and grazing fees in all amounting to Rs. 102 against an expenditure of Rs. 153. The plantation at Chemanguli is protected by fire lines regularly cut and burnt every year. Elsewhere only general protection is afforded to the sholas by burning grass around them. The establishment employed is one forest guard living in a forest hut.

The Ebanad working circle is composed of sholas and grass land. Our operations are restricted to demarcation work and this is nearly completed. The revenue recovered during the current year is Rs. 99 against an expenditure of Rs. 324. The main source of revenue is grazing. There are some Japanese bamboos thriving in Kunnur.

The establishment consists of two forest guards living at Ebanad and Chinnakunnur in forest huts.

The Naduvattam working circle is composed of indigenous sholas and grass land. Demarcation is in progress; there is no other operation under execution just at present. Bellevue I and II of this circle are under disafforestment by exchange for cinchona land to be added to Carritt shola. All the sholas in this circle are protected from fire by burning the grass land around them with an additional fire patrol during the season for general conservancy. Permits are issued for dry firewood, thatching and fodder grass and grazing fees which give revenue of Rs. 118 against an expenditure of Rs. 454. The present establishment is one forest guard living in the forest house at Naduvattam, but an additional watcher is required.

The Revenue and expenditure for the past two years of the Ootacamund range were as follows:—

Budget Sub-heads.	Revenue.		Budget Sub-heads.	Expenditure.	
	1894–95.	1895–96.		1894–95.	1895–96.
	Rs.	Rs.		Rs.	Rs.
Departmental working—			Departmental working—		
Timber	..	..	Timber	3	..
Firewood	11,041	11,664	Firewood	5,161	6,718
Other minor produce	58	115	Other minor produce	42	49
Removed by purchasers—			Removals by purchasers	61	61
Timber	174	226	Rent of leased forest	..	..
Fuel	143	159	Purchase of cattle	..	..
Bamboos	29	31	Feed and keep of cattle	..	..
Grazing and grass	4,576	4,024	Plant, tools, &c.	28	22
Other minor produce	75	146	Roads and bridges	422	761
Other sources	208	362	Buildings	309	329
			Other works	2	9
			Demarcation	260	1,286
			Working plan	5	456
			Sowing and planting	936	1,295
			Fire-protection	284	560
			Other works	248	169
			Other charges	95	2
			Total ..	7,856	11,717
			Salaries	3,015	3,423
			Travelling allowance	553	731
			Contingencies	19	46
			Total ..	3,587	4,200
Total ..	16,304	16,727	Grand Total ..	11,443	15,917

COONOOR RANGE.

This range is bounded by the Coimbatore district at the base of the hills, and on the plateau by the Ebanad portions of Todanad, the Ootacamund settlement, and the Kundahs. The range thus includes the whole of the southern and south-eastern slopes of the Nilgiris to the plains on which the forest growth is deciduous below and shola in the upper parts. The portions of the plateau comprised within its boundaries consist numerous sholas and as well the plantations in and around Coonoor and Wellington. It has for many years been divided into three portions known as Coonoor, Melur and Kotagiri, and the forests on the last two have been supervised by Foresters living at Karteri and Kotagiri under the general superintendence of the Range officer living at Coonoor, an additional Forester being posted under his orders at Kullar at the foot of the Coonoor ghât. For purposes of description it will be simpler to refer to the three portions of the range separately, since hitherto they have been kept distinct from each other. The Coonoor portion includes the forests north of the Coonoor river along the ghât road, the Eucalyptus and wattle plantation in and around the station and Military depôt with some minor sholas as follows.

The Coonoor ghât reserves to the north of the Coonoor river are as follows :—

	ACS.		ACS.
1. Aduthore	790	5. Benhope (ii)	32
2. Kullar	919	6. Hill Grove	147
3. Burlyar	179	7. Lambsrock shola, west.	66
4. Benhope (i)	41	8. Do. east.	464

On the plateau.

	ACS.		ACS.
Tiger Hill (partly on slopes), Brookland shola	328	Little Rallia	29
Coonoor Peak	259	Newman	70
Bandy shola	94	Rallia shola	30
Bleak House	52	Bettumund, south	137
Spring Field	34	Honnathalai, south ...	214
Sim's Park, No. I	48	Theppakuchi	115
Do. No. II	...	Billithettu	35
Black Bridge	390	Hallakarai, partly on slopes	172
River reserve	53	Kodamalai	15.
Town shola reserve	11	Guernsey	14
Ghât Reserve	247	Dolphin	65
Rallia and addition	355		

The blocks enumerated have all been reserved under the Act. Their boundaries follow the Revenue Survey limits of village maps. All are demarcated with cairns and cleared lines, but in the case of Lambsrock, Hill Grove, Tiger Hill, Burlyar, and Kullar there is difficulty in finding the original Revenue Survey stones though there is no dispute as to their boundaries.

There are no blocks now under settlement, but it is in contemplation to increase our reserved area by the addition of various "village forests" and other areas recently selected by the District Forest-officer. To these as yet no names have been given, nor are their areas defined. They are about 100 in number, and of these about 75 are isolated areas, while the remaining 25 represent extensions to existing settled blocks. If, however, the suggestions are reconsidered by the light of the remarks in the inspection note and reservation is not persevered with in the case of comparatively small areas with only unpromising dry scrub or with in and out boundaries and adjoining extending Badaga or other villages in such a way as to hamper the free movements of the people, the number of selections will be much reduced.

This with such modifications as will be made in the course of settlement will complete the reservation of this portion of the range.

The history and constitution of the plateau plantations has been recorded along with a full account of the indigenous shola growth in Mr. Gamble's inspection note—Board's Proceedings, Forest No. 447, dated 5th August 1887. It is not intended therefore to deal with them in this summary of the forest working beyond mentioning that the demand is such an uncertain factor at present as to prevent our working the plantations up to their full capabilities.

The Burlyar working circle was formed in 1887 of the reserved forests known as Aduthore, Kullar and Burlyar and for some few years was worked under a system. The operations included thinnings, cleanings and the plantation of mahogany, but it was not persevered with. There has been no perceptible improvement from these expensive works, for these areas were rigidly fire-protected while the mahogany if it has not done badly, it has not shown vigour in growth even in the most favourable localities.

The revenue from the reserves mentioned as being on the Coonoor ghât, north of the river, is limited to that realized from the removal of bamboos, firewood and jungle wood on permits chiefly from the blocks in the Burlyar working circle. This amounts to about Rs. 2,000 yearly mostly from bamboos for Mettúpálaiyam and adjoining villages, though firewood removed on head-loads brings in about Rs 230 yearly. There is no record of minor forest produce removed from this portion of the range except that it is purchased for the sum of Rs. 430 annually. The chief products are gallnuts and syakai from the lower slopes, honey and wax from all reserves.

The result of a departmental collection was as follows :—

	RS.	A.	P.
Cost	640	3	6
Return	880	3	8

Fire-protection has been limited to the Burlyar working circle, the plantations and the ghât reserve.

The works to be carried out in the Coonoor division are as follows :—

(i) Reclearing and replacing cairns.
(ii) The demarcation, preliminary, of areas under selection.
(iii) Reconsideration of works in Burlyar.
(iv) A building to be occupied by the Forester must be provided, and it is considered, on the whole, advisable to improve the Kullar rest-house now broken down in preference to a new building at Benhope higher up.
(v) A slide may also be requisite for the working of the Coonoor Peak plantation with the object of reducing the expense of transport of the produce. The re-arrangement of our working of the plantations in and around Wellington and Coonoor may necessitate various minor operations of the same nature.

Melur Sub-Range.—The Melur portion of the range includes the Merkunad, and is situated to the south and south-west of Coonoor settlement. The area under conservancy includes the following blocks :—

On the outer slopes.

	ACS.		ACS.
Hullikull	6,411	Pakasuramalai	625
Pillur slopes	2,332	Melur slopes	4,399
Do. addition ...	896		

On the plateau.

Ithalar in Todanad (attached to the Coonoor Range) ...	241	Sutton shola	52
Puduhatti	27	Sutton shola addition ...	38
Sillhulla	192	Commandu	993
Devashola, North	215	Do. addition (enclosed)	32
Do. South	...	Thaimalai shola	43
Balakola	231	Tudor shola	24
Thalakad	350	Pembroke	122
Kottibenu	35	Osahutti	152
Melur, West	238	Kollakombay	830
Vagunthabettu	79	Pillur shola	39
Mary land	34	Kulear	226
Adigarhutti		Koderu	21

All are finally demarcated but with temporary pillars on cleared lines. There are no disputes except as to an enclosed tank in Commandu reserve, and there is a difficulty in finding the Revenue Survey stones around the Mélúr slopes where they adjoin coffee estates. Beyond this only reclearing and replacing turf with stone in the cairns remain for execution.

In Merkanad, there are 31 separate areas formerly classed as village forests, which are now before Government for final notification as reserved forests, having been recently settled; also an area, Nirburra, 200 acres in extent, notified for settlement; there are also numerous village grazing grounds reserved for that purpose at the time of the Land Revenue Settlement, but with them the department is not at present concerned. Pakasuramalai and the northern slopes of Hullikul are evergreen forest as also the upper portions of the Pillúr and Mélúr slopes; the lower portions of all three contain deciduous growth, grass or bamboo. The remaining areas on the higher ground for the most part are either shola or grass land. On the lower levels, there is deciduous forest, notably in Sutton shola and Commandu. In Devashola is a plantation of bluegum over about 4 acres, 15 years old, never yet cut, there being no market for the produce. There is a small demand for building timber at certain seasons which is met by issue of special permits for selected trees.

The main revenue derived is from firewood and grass for thatching removed on head-load permit.

Under minor produce, the following articles are collected either departmentally or on contract, viz., honey, wax, gallnuts, syakai, deer horns, preference being given to the contract system when possible.

Grazing is permitted on annual permits which are taken by Badaga ryots and some coffee planters and a revenue of Rs. 400 is derived from this source.

The establishment consists of the Forester at Karteri and guards who live in Government huts at Hullikul, Kollamkombai and at Munjakombai on the Devashola-Mélúr road.

Fire-protection is applied to Devashola north, lines being cut yearly, and one fire patrol employed in the dry season.

Forest offences in this portion deal chiefly with illicit removal of firewood and illicit grazing.

The works in hand in connection with this sub-division of the range are as follows:—

(i) Completion of demarcation of reserved forests.
(ii) The demarcation of blocks to be or now under settlement.
(iii) Enquiry into demand for produce on the lower slopes of Pillúr, Mélúr and Hullikul.

Kotagiri.—The Kotagiri portion is situated to the west of Coonoor, and contains the Parangiriad with the exception of five villages—(1) Coonoor, (2) Yeddapalli, (3) Burlyar, (4) Vubuthalai, (5) Jakkathala—which are included in the Coonoor portion.

The areas under conservancy are, as follows:—

On the outer slopes.

	ACS.		ACS.
Kullar reserve	308	Suttapollium	54
Jakkanare slopes	6,419	Yerkaduhulla	20
Konakarai	1,864	Nadukadhulla	908
Vagapanai	2,648	St. Catherine's Falls... ...	124
Constantia	35		

All these are sholas though in the case of Jakkanare and Vagapanai deciduous forests is included, and Nadukadhulla and St. Catherine's Falls contain grass land.

On the plateau.

	ACS.		ACS.
Denad partly on slopes ...	2,073	Kilhutti	17
Naduhutti	509	Hadumund	48
Longwood	319	Uppatti	53
Do. addition	31	Doddakorai	62
Kerbetta	12	Ulvanadmund	57
Kunnavarai	100	Sinhuttu shola	51
Do. addition ...	97	Madanad	723
Kunnavatti	16	Kodanad valley	294
Bettu Nos. 1 and 2	29	Nedugula	89
Gudakulhulla	299	Kessalada	...
Nott shola	8	Shamrock	43
Gudakull	600	Bikkhutti	19
Deepdale	361	Ittakul, (i) } Do. (ii) }	21
Clyffe	33	Mavada	211
Sundhutti	124	Kuttada, (i) and (ii) ...	29
Kunshola	159	Dodabetta	105
Kirkinare, (i)	9		
Do. (ii)	15		

Of these Naduhutti and Sundhutti, Kirkinare are purely grass lands, while the majority of the others also contain a proportion of similar land.

All are reserved forests and have been demarcated with cairns and cleared lines. All through the selections boundaries have been chosen along the surveyed limits wherever possible, and with few exceptions the cairns replace survey stones: the village maps, therefore, show the reserves with sufficient accuracy.

In the case of Madanad reserve, Ulvanadmund and Kullar, there are disputed encroachments.

Additional selection has proceeded in the way of transferring to reserves village forests, and other small areas found suitable.

No departmental working has been commenced. The principal demand is for bamboos on the Jakkanare slopes. They are removed on permits issued at Kullar, Jakkanare and Sirumugai. The revenue from this source is about Rs. 1,600 in a year; fern, firewood, creepers, &c., bring in about Rs. 50; timber gives Rs. 300 from reserves on the plateau; and grazing about Rs. 1,000 from the plateau villagers who roam over the plateau and slopes.

From minor produce a revenue of Rs. 270 is recovered at a cost of Rs. 150 from the following items:—

Gallnuts, seakai, deer horns. This year the area is included in a contract for the whole range for Rs. 430.

The reported offences are chiefly connected with the removal of firewood from the plateau forests.

The establishment employed besides the Forester is as follows:—

	RS.
One guard at Kotagiri	10
Do. at Denad	8
Do. at Kodanad	7

Two tannah watchers at Jakkanare and Kengarai. Longwood has been under protection from fire since 1885 by cleared lines, and one watcher is employed upon it.

In this reserve is a road through the shola, and it is of general use.

There is a house in ruins in Kotagiri, a guard's hut in Longwood, another in Kengarai and one at Kodanad.

The revenue and expenditure for the past two years of the Coonoor range were as follows:—

Budget Sub-heads.	Revenue. 1894-95.	Revenue. 1895-96.	Budget Sub-heads.	Expenditure. 1894-95.	Expenditure. 1895-96.
	RS.	RS.		RS.	RS.
Departmental working—			Departmental working—		
Timber	434	..	Timber	275	..
Firewood	7,131	10,182	Firewood	7,401	8,975
Other minor produce	9	979	Other minor produce	524	113
Removed by purchasers—			Removals by purchasers	734	839
Timber	601	1,208	Confiscations	..	6
Fuel	997	907	Purchase of cattle	..	..
Bamboos	2,749	2,932	Feed and keep of cattle	..	..
Grazing and grass	2,682	2,239	Plant, tools, &c.	24	11
Other minor produce	301	541	Roads and bridges	388	12
Confiscations	24	3	Buildings	467	382
Other sources	305	268	Other works	14	41
			Demarcation	1,099	966
			Forest Settlement	..	101
			Working plans	..	8
			Sowing and planting	367	240
			Fire-protection	862	759
			Other works	22	112
			Other charges	..	15
			Total ..	12,177	12,580
			Salaries	3,379	3,349
			Travelling allowance	1,173	1,304
			Contingencies	116	124
			Total ..	4,668	4,777
Total ..	15,233	19,259	Grand Total ..	16,845	17,357

The work to be undertaken are as follows:—

(i) Demarcation including the re-clearing of lines and the preliminary marking of new selections. The works to be carried on are purely protective with the exception of demarcation and the working of the Coonoor plantations.

For these reasons, and also seeing that we recover no revenue from the vast majority of the plateau reserves, it is scarcely just to other more important and profitable forests to concentrate our small staff of establishment upon the Coonoor Range and if the demarcation can be provided for by a temporary staff it will suffice to keep a Forester to help the Ranger at Coonoor, and another on the ghâts. This will obviate the re-building of the houses at Karteri and Kotagiri, only temporary visits being paid to the localities and not necessarily to the settlement.

November 1893.

E. D. M. HOOPER,
Ag. Conservator of Forests, Southern Circle.

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APPENDIX II.

Notes regarding the habits and peculiarities of the principal timber trees in the Nilgiri district by the late Rhodes Morgan, Esq., Deputy Conservator of Forests.

The sholas of the plateau are devoid of all timber trees—only one or two species affording indifferent timber, such as *Michelia Nilagirica* and *Tern stromia gymnanthera*.

On the slopes many valuable timber trees occur, the principal of which are :—

1. *Tectona grandis.*
2. *Dalbergia latifolia.*
3. *Pterocarpus marsupium.*
4. *Acrocarpus fraxinifolius.*
5. *Cedrela toona.*
6. *Briedelia retusa.*
7. *Bischoffia javanica.*
8. *Lagerstromia microcarpa.*
9. *Santalum album.*
10. *Hardwickia binata.*
11. *Swietenia chlorocxylon.*
12. *Nauclea cordifolia.*
13. *Nauclea Cadamba.*
14. *Acacia sundra.*
15. *Anogeissus longifolia.*
16. *Bignonia xylocarpa.*
17. *Vitex altissima.*
18. *Michelia Champaca.*
19. *Grewia tiliæfolia.*
20. *Mesua Coromandeliana.*
21. *Terminalia tomentosa.*
22. *Terminalia Arjuna.*
23. *Terminal a Chebula.*
24. *Soymida febrifuga.*

1. *Tectona grandis.*—The teak tree grows on the slopes of the hills up to 3,500 feet both on the eastern and northern slopes, but it is not found on the western slopes which are clothed with ever green forest. It occurs also in the Nilgiri, Wynaad taluk, in the Mudumalai, Benne and Kombrakolly forests, where it reaches large dimensions. In the arid country of Sigur and the north-eastern slopes, it occurs more sparingly and it is small, crooked and much flamed. The timber, however, is harder and more richly "figured" than the timber grown on the moister tracts above mentioned. The teak tree is gregarious. Large patches of teak are found in some portions of the forest, whereas in others not a single tree is to be seen. The teak prefers rich alluvial bottoms near rivers and streams, and often in such situations, as will contain 300 cubic feet to the tree. Old trees are generally flamed and show heart shake. They also contain much lime, like the rosewood, both in masses and scattered grains disseminated regularly through the wood. The seed of the teak tree is much eaten by rats, squirrels, &c. In the deciduous forests of the Wynaad where the leaf canopy is thick, and the gross high teak will not propagate itself; but when a clearance is made and all the trees cut over clean, numerous coppice shoots come up, and seedlings and grow vigorously. This may be seen in old Kurumber tuckles where light and air is let in by a clean felling. Any teak trees felled coppice freely, and any good seed then lying in the soil germinates and grows freely. In the North Malabar forests near Naikutty two or three teak trees grow in a coffee estate. As it was the intention to abandon the estate, the Kurumbers were ordered to spare all teak plants when digging up the soil and weeding. The consequence was the three trees above mentioned dropped large quantities of good seed into the loosened soil. These seeds grew thickly and as they were then cleared of weeds for three or four years, they grew past danger, and when the estate was abandoned, the ground become covered with a dense growth of straight poles. Some of these poles will, no doubt, in course of years grow into good timber, if judiciously thinned, pruned and protected. This is the only manner in which satisfactory reproduction can be obtained. All worthless trees must be removed, the soil dug up, and made fit for the reception of the seeds which, when light and air let in, will grow freely enough. The growth of the teak in Wynaad is slow and only one-third that of the growth in Nilambur Crow-bar planting of teak is very successful. The young plants have thick carroty roots, which have enormous vitality; very often teak plants put out in the monsoon will appear utterly dead the next dry weather; but as soon as the April showers fall, a coppice shoot will spring up from the fleshy root, and other conditions being favourable, the plant will grow apace. Teak grows best on what is commonly termed black cotton soil. This soil is extremely clayey and tenacious and generally contains very small nodules of lime in it below the surface. The bamboo is extremely prejudicial to the growth of teak and indeed, of every other tree or plant, and when teak is found growing amongst bamboo, the latter has sprung up subsequent to the former having thoroughly established itself. The roots of the bamboo occupy every inch of soil, and will starve and kill any plant that may succeed in growing a few inches high from seed. Teak seeds should be collected in February for sowing. As regards the planting of teak I need say nothing further, as the system is well known and practised on a large scale in Nilambur.

2. *Dalbergia latifolia.*—This magnificent tree grows from the sea-level to 4,500 feet elevation. It may even be found above that elevation, but never grows into a tree, remaining a small scrubby bush, and covering patches of ground on the margins of sholas. It reaches its greatest perfection at an elevation of 3,000 feet where single trees of 8′ to 10′ in diameter may be seen. The rosewood prefers very rich soil and reaches its maximum size on alluvial land on the banks of rivers. The growth of the tree is very slow. It coppices freely when young, and throws up root-suckers freely wherever the roots are cut or injured. It seeds heavily every alternate year and fairly in the intervening years. Once properly established, it has considerable vitality, and will stand being burnt year after year. The wood often contains much lime which occurs disseminated in minute particles throughout the tree or in masses in cavities caused by injuries. This lime very quickly blunts the saws used to cut the wood and sawyers usually therefore demand extra rates for sawing it.

3. *Pterocarpus marsupium.*—The venghay or honne, by both of which names this valuable timber is known in this district, grows well in the Wynaad and on the slopes up to 4,500 feet elevation. It grows freely from seed which being winged is blown, to a very great distance from the parent trees. I have found venghay seeds lying on the Khoondahs which had been blown up 7 or 8 miles from the Wynaad plateau. The venghay loves a rich soil and is generally found in the same situations and growing with teak and rosewood. If cuttings are taken from young trees, they will root readily. The remarks made regarding the propagation of teak apply in a great measure to venghay. The seeds which are produced in abundance annually are very evenly distributed over the forest (unlike teak) and germinate freely if the grass has been burnt. But the young plants are speedily killed out by the coarse grasses which grow with surprising vigour after a burn and soon overpower and destroy the young seedlings. The thinning out of worthless trees, the removal of the rank grass and the digging up of the soil are absolutely essential, if the reproduction of venghay or indeed any other valuable tree is aimed at.

4. *Acrocarpus fraxinifolius.*—This gigantic timber tree, only grows in heavy evergreen forest on the southern and western slopes. It is not found on the eastern slopes where the rainfall is too light to suit it, and is occasionally found on the northern slopes. It is most abundant in the Droog forests in Coonoor. The pink cedar or shingle tree is partial to the banks of streams and moist places. It is a very rapid grower but a shy seeder. Owing to the immense size of the tree, the seeds are very difficult to procure. The young plants spring up readily in the sholas and will bear a good deal of shade without injury, though their growth is retarded. Any access of light occasioned by the fall of surrounding trees, greatly benefits them and causes an increased and rapid growth which speedily carries their heads into light and sunshine and enables them to hold their own. All that is necessary therefore is to assist young saplings by cutting away worthless trees and letting light in.

5. *Cedrela toona.*—The red cedar grows up to 5,000 feet. It is partial to ravines and moist places and is fairly abundant in sholas on the lower slopes. The seed is very small and light and is blown great distances by winds. The young plants grow exceedingly fast. It reaches a very large size in the moist evergreen sholas of the western slopes. It a very vigorous seeder, and a most useful tree and should be extensively propagated. Numerous plants have been raised and planted out in open spaces in the ghât reserves below Coonoor. There is no difficulty in growing it from seed. The red cedar grows luxuriantly in ravines in the Wynaad, but except where grown in dense shade the tree is crooked and does not produce straight timber as it has a tendency to fork and branch low.

6. *Briedelia retusa.*—This tree grows in much the same places as the red cedar. It is called mul venghay and komanji. The seeds are eaten by birds and thus propagated. It is a fairly rapid grower when young and is easily propagated from seeds. It grows well on hill slopes. The timber is in much demand in Wynaad, as it is considered proof against white ants.

7. *Bischoffia javanica.*—This handsome timber tree is partial to ravines and water courses, and is not often found in other situations. It seeds heavily. The seeds being round, and about the size of peas, fall direct on the ground. Very few seedlings come up out of the immense quantity of seed that falls, for most of it is destroyed by rats. It can be readily propagated. The timber, though valuable, is liable to the attacks of the woodborer (*xylocopa*) and is not held in much favour by Natives.

8. *Lagerstræmia microcarpa.*—This fine timber tree grows up to an elevation of 3,500 feet. The timber is held in much estimation as it is light, strong and easily worked. It prefers rich soil and grows to a large sized tree sometimes containing 200 cubic feet of timber. It seeds in great abundance, and young seedlings grow fairly quickly. It is found on the edges of sholas and in deciduous forests. The seeds are light and are fairly evenly distributed. The venteak has a tendency to dry rot, and trees may be seen apparently in full vigour, with numbers of holes all the way down the trunk made by woodpeckers to rest in. This tree would be more abundant were it not for the rank grass that destroys all the young seedlings. The same remarks regarding teak and venghay apply to this as far as reproduction goes.

9. *Santalum album.*—This very valuable wood is only found in the Sigur forest, and on the northern and eastern slopes of the Nilgiris up to an elevation of 4,000 feet. It is partial to ravines, water-courses, and dry sholas and will not grow well as a rule in the open. There are certain trees which it affects and near which it grows with great luxuriance—other trees again are detrimental to it, and near such trees it grows badly. The leaves turn a sickly yellow, and the tree languishes. This is due to the fact that it is a root parasite, and obtains nourishment from the roots of certain trees which serve it as hosts. It bears large quantities of purple berries, which are greedily eaten by birds, and thus carried far and wide and easily propagated. It prefers a reddish or chocolate coloured soil, but will also grow in a black cotton soil, provided the drainage is free. If the drainage is not good, the plant grows sickly and the leaves turn yellow and fall off. The wood is most valuable when grown on rocky soil. In such situations, the essential oil is most largely developed. The sandal tree ought not to be felled, but rooted up bodily. When this is done, numerous rootsuckers come up from the severed roots, and the tree

removed is thus replaced and a larger amount of billet wood obtained. The sandal grows freely in hedge rows, for in such places birds love to sit and there drop the seeds, which favoured by the protection of the h dge grow up into trees. In rich soil the growth of this tree is fairly rapid; but in such situations heart wood is not quickly made, and the proportion of sap wood is much greater—sandal is easily propagated by seed. The plants should then be placed in baskets and the baskets put out in October in favourable sites, care being taken to plant cuttings of suitable plants round it for protection. Cattle, goats and deer are very partial to the leaves, and eat the young plants down greedily. Fire is fatal to the sandal tree which rarely recovers after having been once badly scorched.

10. *Hardwickia binata.*—The acha is a magnificient timber tree, but it is very scarce in this district. A very few trees are found in the north-eastern slopes of the Nilgiris. It grows to a large size, generally on steep slopes of hills to which it gives a park-like character. The trees grow about 100 yards apart as a rule. The seeds are very light, and are carried far and wide by wind. They germinate freely, but are annually destroyed wholesale by forest fires and efficient fire-protection is sufficient to ensure a good growth of seedlings. Cattle eat the leaves greedily, and herdsmen pollard the trees for their cattle and remove the fibre for ropes. The wood is exceedingly hard and dense any is extremely valuable. It will last for ever if well protected. It is dark in colour and handsomely figured, is an excellent building and furniture wood and has doubtless a great future before it. It is a timber to which the Forest Department should pay most special attention and all tracts of forest in which it grows should be most carefully and scientifically treated. It prefers a rocky and stony soil and a steep slope where the rainfall does not exceed 50 inches.

11. *Swietenia chloroxylon.*—The satin wood grows sparsely in the Sigur forests and the eastern slopes of the Nilgiris. It prefers a red soil, and rocky ground with a rainfall of from 20 to 40 inches. The seeds are very light and are blown a long distance by the wind. The reproduction is good, but the tree is of slow growth and any excessive drought kills all the young plants. Protection from fire is all that is needed to ensure reproduction. The mature tree rarely exceeds one foot in diameter in this district. It is much valued for cabinet work and for the naves of cart wheels.

12. *Nauclea cordifolia.*—This tree flourishes best in a rich soil near streams. It is of rapid growth and attains a large size. The wood is yellow, soft and easily worked; is used for house-building and furniture, but unless well seasoned, warps and shrinks badly. It is very liable to the attacks of the *xylocopa*. The seeds are minute and not easily disseminated except when swallowed by birds. Fire-protection is the only measure necessary to ensure its rapid reproduction.

13. *Nauclea cadamba.*—Same remarks apply to this species which only grows near water.

14. *Acacia sundra.*—This very hard-wooded tree is only found in Sigur and the lower portions of the eastern slopes of the Nilgiris. It does not flourish above 2,000 feet elevation. It is a gregarious tree and prefers a red sandy soil which is often stony or rocky as well. It seeds freely and the reproduction is good; but the trees are generally crooked. If the north-east monsoon is favourable, the seeds germinate freely. No special measures are needed to ensure reproduction.

15. *Anogeissus longifolia.*—A good timber tree; but not considered very valuable by the Natives. It is also known as *Conocarpus longifolia*. It is the commonest tree in the deciduous forests of the Wynaad and the slopes. It seeds abundantly, and the reproduction even under very adverse circumstances is very good. It grows indifferently on all soil and situations and is extremely hard; young plants spring up in abundance everywhere and no measures whatever are necessary to ensure reproduction.

16. *Bignonia xylocarpa.* - A small timber tree with long curved pods covered with tubercles, the seeds are small and winged and therefore blown widely everywhere by the wind. It grows in Wynaad and the slopes indifferently up to 4,000 feet elevation. The flowers are white and are borne in profusion in the hot weather. It reproduces itself pretty freely, and no special measures are necessary to ensure reproduction.

17. *Vitex altissima.*—This timber tree is common in the Wynaad and grows freely; but is as a rule much branched and crooked. It seeds abundantly and the reproduction is fair. No special measures are necessary for its reproduction.

18. *Michelia champaca.*—This handsome tree is scarce in the Wynaad. It is generally planted near temples, and is considered sacred. It occasionally grows to an extraordinary size. The flowers are yellow and appear in the hot weather. They are very fragrant and valued by the Natives. This tree usually grows in sholas, or near water. The timber is brown in colour and valuable for house building and furniture. The seeds are borne in clusters and are of a brilliant scarlet in colour. Birds eat the seeds and it is thus disseminated. It is easily grown from seed and of quick growth. The best way to propagate it would be to plant out seedlings in baskets in favourable places.

19. *Grewia tiliæfolia.*—This timber tree is commonly distributed in the forests everywhere up to 4,500 feet elevation. It grows readily from seed. The tree bears an acid fruit of a red colour, of which birds are very fond. They eat quantities of it and it is thus disseminated widely. No special measures are necessary for its reproduction. The wood is of a dark reddish chocolate in colour—very dense and elastic and valuable for house building, &c.

20. *Mesua coromandeliana.*—This very hard timber is only found in evergreen tropical sholas on the western and southern slopes of the Nilgiris and Wynaad. It is of slow growth and reproduces itself readily and rapidly from seed. The young plants bear shade very well. The wood is a reddish-brown in colour and very hard; but is subject to dry rot if exposed to damp.

21. *Terminalia arjuna.*—This grand timber tree only grows on the banks of rivers and streams and is never found on hill slopes. A few trees are found in Sigur; but it will not flourish where the rainfall exceeds 40 inches. It grows to an immense size. The timber is hard and durable and in much request by the Natives. The seeds are borne in profusion and as they drop on damp soil, or into water, germinate and grow readily if in an open spot with good soil. There is no difficulty in propagating this noble tree.

22. *Terminalia tomentosa.*—The black muthu grows in great abundance in the forests of Benne and Mudumalai It requires a heavy rainfall and a rich black soil. In such situations it grows to an immense size. It seeds freely, but the majority of the seeds are destroyed by rats, squirrels and monkeys and few remain to germinate. It is, however, a very hardy tree, and reproduces readily, so no special steps are necessary to secure reproduction except fire-protection. The timber is heavy and durable; but is subject to dry rot, if exposed to damp, and is liable to the attacks of white ants.

23. *Terminalia chebula.*—This valuable tree is rarely felled for its timber on account of the great value of its nuts known as myrabolams in trade, and which are largely used for dyeing and tanning. This tree grows up to an elevation of 5,400 feet. It grows scattered amongst other trees and reproduces itself fairly well. The large seeds dibbled in the ground grow well and quickly, and the tree can thus be easily reproduced. It requires protection from fire when young. Older trees are much infested by Loranthus, which diminish their yield of fruit, and require removal. The gallnut flourishes best in a moderately rich soil, with a rainfall of from 40 to 70 inches. These trees are often much damaged by the persons who collect the gallnuts lopping off the branches.

24. *Soymida febrifuga.*—This valuable timber tree is scarce in this district. It is only found in the lower slopes of the Nilgiris. The reproduction from seed is poor and artificial aid is necessary to increase it. It grows indifferently on most soils. It cannot be considered an important tree in this district.

FURTHER NOTE ON ROSEWOOD.

Dalbergia latifolia.—Blackwood or rosewood is found from the sea-level to 4,000 feet in elevation. It is one of the principal timber trees of the deciduous forests being rarely found in evergreen (shola) forests except on the edges of such forests or standing isolated in grass land between sholas. It grows readily from seed and rootsuckers and when felled young coppices freely; rosewood prefers a stiff black clay soil with lime in it. The sap takes up quantities of lime which is deposited in lumps often weighing 20 or 30 lb. in cavities in the trees caused by injuries. Hence it is a difficult wood to saw as in addition to its hardness, the lumps of lime break the teeth of the saws used in cutting it.

The finest rosewood is found in the Wynaad plateau in the teak zone and also along the verge of the Western Ghâts, where grand solitary trees used to grow on the grass hills. In 1884–85 a very active demand sprung up for good-figured logs in the Bombay market, where this wood is much valued in making the famous and unique. Bombay carved rosewood furniture. Prices rose to 9 annas 6 pies per cubic foot, in North Wynaad at which rate I cut and disposed of a large quantity of fine timber. Planters and Native jenmies immediately rushed into the trade and disposed of very large quantities of timber principally from Vayitri and the Pulpully forests. All trees containing over 20 cubic feet of timber were quickly felled and sold. In former years, thousands of magnificient rosewood trees were felled and burnt by planters as valueless when opening land for coffee.

Messrs. Brown and Company of Tellicherry were the first to enter into a regular trade in Indian timber with the London and foreign markets on the continent and I sold them some teak, rosewood and other timber at fair rates, the rosewood I think at 9 annas 6 pies per cubic foot.

In Nilgiri-Wynaad a considerable quantity of rosewood is still available Some of it was felled in the Mudumalai forest, when improvement thinnings were carried out there, and sold at the very low rate of 4 annas per cubic foot in 1886, but this was stopped. At present it is difficult to obtain 6 annas per cubic foot for the finest rosewood in the Benne and Mudumalai forests. There is no demand for it, and access to the coast *viâ* Karkoor is difficult.

(Signed) RHODES MORGAN.

RESOLUTION—Forest No. 121, dated 20th March 1897.

Recorded with the following remarks.

2. *Paragraph* 15 *of the Inspection notes.*—The reservation of each block should be left to be decided on its merits; and in the case of blocks notified under section 4, the necessity for reservation should, as suggested by the Collector, be considered during settlement by the Forest Settlement-officer, who should bring to the notice of the Collector or the District Forest-officer any case in which he sees reason to believe that it would be inadvisable to proceed with reservation.

3. *Paragraphs* 30 *and* 37.—Mr. Hooper's attention will be drawn to the remark made in paragraph 1 of Board's Proceedings, No. 174, dated 4th April 1895, to the effect that it must be understood that any measures now decided on with regard to the Mudumalai and Benne forests must be systematically persevered with for a series of years. This remark was concurred in by Government in Government Order, No. 820, dated 12th June 1895.

4. *Paragraph* 33.—The Board notes that the report promised by the Collector on the Baduga plantations will become due by the end of the current (forest) year.

5. *Paragraph* 38.—The proposal to improve the subordinates' quarters at Mudumalai, Benne and Masnigudi is approved.

6. It is noted that the general condition of the District Forest office is satisfactory.

7. The Board desires to thank Mr. Hooper and the District Forest-officer for the carefully drawn-up history of the forests which appears as an appendix to the Inspection report.

(True Copies and Extract.)

Secretary.

To the Collector of Nilgiris.
„ the Conservator of Forests, Southern Circle.
Copy to the Secretary to Government, Revenue Department.

Exd. P. Seetharam.

Government {1897} of Madras.

REVENUE.

Recd. } 1897. *Enclosures*

Regd. } *Spare copies*

G.O., No. 329, 14th May 1897.

MAY.

Inspection Report.

Recording, with a remark, Board's Proceedings reviewing the — of the Conservator of Forests, Southern Circle, on the forests of the Nilgiri district.

GOVERNMENT OF MADRAS.

REVENUE DEPARTMENT.

Read—the following Proceedings of the Board of Revenue (Land Revenue), Forest No. 121, dated 20th March 1897 :—

Read—the following letter from E. D. M. HOOPER, Esq., Acting Conservator of Forests, Southern Circle, to the Secretary to the Commissioners of Land Revenue (through the Collector of Nilgiris), dated Coimbatore, 12th November 1896, No. 1787 :—

I have the honour to submit for the information of the Forest member an inspection note on the forests of the Nilgiri district together with an appendix recording along with a small map as much of their previous history as I have been able to discover.

Enclosure No. 1.

INSPECTION NOTES—NILGIRI DISTRICT.

Inspection Notes. Collector's Remarks.

Tour.—The inspection note now submitted is based on observations made on various tours which included visits to the plantations and sholas in and around the settlements of Coonoor, Ootacamund and Kotagiri—the ghât forests both on the south and north of the district and the Wynaad forests along the Moyar river including Mudumalai and Benne. The Kundahs and the north-west of the Todanad were also visited as well as the Badaga plantations in Ebanad. The District Forest office was inspected as also the Range offices of Coonoor, Ootacamund, Sigur and Mudumalai, and the depôts at Ootacamund, Coonoor and Wellington. The Acting Conservator also held charge of the current duties of the District Forest office for a month and thereby became thoroughly acquainted with the details of the works on hand.

2. *Previous inspection notes.*—Subsequent to the reorganization of 1882 by which the District Forest-officer became the Forest Assistant of the Collector, the reports of inspection by Conservators have been recorded in various Board's Proceedings, and from them the following facts have been collected.

3. Mr. Gamble in December 1884—Proceedings No. 271-F.-54, dated 27th January 1885—inspected the South-east Wynaad and the Moyar valley forests. This report describes in general terms the growth in the Mudumalai leased forests,

Collector's Remarks. Inspection Notes.

and, after pointing out drawbacks in the terms on which they were leased from the Tirumalpad of Nilambúr, described a plan of operations for the improvement of the young stock and the removal of mature produce from a compartment each year—such compartments to be selected in the first place by marking them off arbitrarily on the map. The report also referred to the roads and buildings absolutely required, described the Moyar reserve and the sandal plantation in the Northernbay reserve which had then cost Rs. 437 per acre and was being yearly protected from fire with indifferent success. The report proposed cheaper measures for conserving it.

4. The same officer—Proceedings, Forest No. 48, dated 1st February 1887—reported further on the working of Mudumalai improvement operations amplifying his previous suggestions, and pointing out how best to carry them out. It should be noted that the lease of the forests was modified at this time, the main alteration being the acquisition of the Kombarakolli forest and the right to continue the lease after the 99 years of original grant were completed in return for an increased yearly payment of Rs. 1,000.

The next important report was published in Proceedings, Forest No. 447 of 5th August 1887. It contains a statistical account of the district and a descriptive account of the different ranges, and enumerates the species of which the sholas at the different elevations chiefly consist. It deals in detail with the different plantations of *Eucalyptus* and *Wattle* and formulates preliminary schemes for working each. The report also lays down general principles for operations in shola growth and for dealing with dry scrub forests. This report dealt very fully with the treatment of the blocks, but Government was not prepared to agree with the proposal for work in the sholas as tending to replace their beautifully irregular appearance by an unpleasing uniformity.

5. Mr. Peet in his letter printed in Proceedings, Forest No. 544, dated 21st September 1887, pointed out that to protect the sholas from losing their appearance the operations in them should be restricted to the highest selection fellings and not to introduce the coppicing of them

Inspection Notes.

Collector's Remarks.

with reservation of standards. The Government order in this matter declared that nothing was to be taken from sholas in the settlement and blanks in them were not to be filled by bluegums and *acacias*.

6. I can find no inspection note subsequently until that of Mr. Cherry in Proceedings, Forest No. 48, dated 24th January 1893. In the interval, the district had been transferred from the Northern to the Southern Circle in April 1891; the office was inspected in November 1889 and again in August 1891 and there was also correspondence on the treatment of sholas and further reservation of forest.

7. The first inspection note by Mr. Cherry dealt with various subjects comprising the progress in and system of selection which was not so advanced as supposed prior to Conservator's report in Board's Proceedings, Forest No. 357, dated 13th August 1891, nor was it so accurate or satisfactory as believed, the boundaries required personal inspection, the cairns erected were too small and there were insufficient sign-boards. The Kundah reserves were dealt with in detail, the modification of their area by extensions, the excessive grazing in them, and its ill effects. It was remarked that the advent of the Government of India Survey Department to the Nilgiris was unnecessary at present, the village maps sufficing for all current works. He advocated the planting of more hard timbers mentioning *Cupressus*, *Arancarius* and *Deodara* and made a suggestion to cut blue gum at eight years in place of ten years. The difficulties in carrying into practice the provisions of the working plan for Kullar and Burlyar were adverted to and the question of coppice in sholas, the growth of prickly-pear in the Sigur forest, the approaching exhaustion of sandal were also casually referred to.

As regards Mudumalai, the idea was mooted of selecting a healthier forest station and the advantages of Gurugani were discussed and another site Chickanandibetta (central for the forests including Chedleth) where a serambi should be built. Reference is made to the damage by yearly fires in Mudumalai, and the comparative uselessness of the methods adopted to prevent them.

Collector's Remarks.

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He advocated more organized and restricted working in Benne and Mudumalai, the thinning of the teak plantations and their pruning. He concluded by his inspection notes of the office.

8. As a result of this inspection the Board ordered Mr. Popert to inspect the timber forests of Mudumalai and his report will be referred to further on.

9. Mr. Cherry in the following year again submitted an inspection note recorded in Proceedings, Forest No. 823, dated 7th December 1893. His remarks dealt with selection of boundaries and demarcation. The policy to be adopted in further selections, extensions of reserves even to the extent of buying private lands, to improve areas and straighten boundaries. The reasons for the small revenue derived were also discussed—also grazing, roads and buildings.

The Acting Collector's remarks were in general consonance with the views of Conservator, but the permanent Collector on return took exception to some important items of policy in dealing with the Badagas and their expansion.

10. Mr. Cherry also reported—*vide* Proceedings, Forest No. 824, dated 7th December 1893—on the progress of the operations in Mudumalai initiated by Mr. Gamble in 1885.

11. A third inspection note by Mr. Cherry is recorded in Proceedings, Forest No. 96 of 18th February 1895. On this occasion the chief matters treated were the plantations and the difficulty of disposing of their produce, the abandonment of the Burlyar working scheme and the Todanad selections. The working of the different plantations, statistics of cost and of return from charcoal, the use and abuse of forest bungalows by the public, the municipal assessment on the plantations, and free grants of produce from reserves to Todas were also touched upon.

12. The report by Mr. Popert on the Mudumalai leased forest is recorded in Proceedings, Forest No. 174, dated 4th April 1895.

13. One other report of interest is printed in Proceedings, Forest No. 609 of 3rd November 1892. It gives the sanction to expenditure on planting lands outside reserved forest for the immediate

Inspection Notes.

benefit of the adjoining Badaga populations and the result of the operations will now be specially reported.

14. *Settlement.*—The Forest Settlement is being carried on by the Head Assistant Collector and presents little difficulty though it cannot, of course, progress as with a whole-time Forest Settlement-officer. The work in Merknad has been completed and with the careful preparatory work in the other nads there should be little delay in carrying out the settlement remaining to be done amounting in all to 53 square miles especially if we apply the rules here proposed as a test to the selections which are to stand. It is certain, however, that the detail of demarcation and settlement will largely occupy the time of the Coonoor and Ootacamund Range officers for another two years.

15. *Selection.*—The area of reserved forests on 30th June 1896 is reported to be 356·94 square miles. This may be taken to represent the reservation of the forests properly so called situated on the Nilgiri slopes and the Wynaad plateau, the Kundahs and hill tracts in the upper valley of the Pykara river, also the sholas of importance on the plateau. The selection of these tracts was mainly conducted prior to the amended policy of 1890 when it was decided definitely that our operations should be extended to provide village requirements notably in grazing hitherto met from Government land outside the reserves. The correspondence which ensued has led to the settlement of a large number of areas of village forests and areas available for sale, some of small size and with awkward boundaries, with the hope of improving whatever growth they possess in the interest of adjoining villagers. It was decided—Proceedings, Forest No. 448 of 19th August 1892—that each nad should be treated separately, and proposals for reservation were submitted for them successively after examination of the ground by the District Forest-officer. In this way a decision has been come to for the whole district though the details connected with the definite selection of many of the minor areas have still to be worked out in Paranginad and South east Wynaad, and after the views of the permanent Conservator and Collector have been so freely expressed, there

Collector's Remarks.

Collector's Remarks.

There is some force in Mr. Hooper's remarks, but in a tract of country that has been heavily cultivated by the Badoga and on which a few small village forests or patches of reserved land constitute the only remaining tree growth, it is difficult to know what to select and to reject. I think that as in Merkunad, Board's Proceedings, Forest No. 728, dated 27th November 1894, so in Paranginad, the Forest Settlement-officer might be left to exercise his discretion in the matter of these smaller areas and relinquish such as he considers are better left for the free use and benefit of the surrounding populace. The District Forest-officer can always be consulted and, if any serious difference of opinion arises, it can be referred for the decision of the Collector.

(Intld.) H. T.

Inspection Notes.

seems to be no reason for referring to the question at this late hour, though from the point of view of the general interest or even of the forest interest, the expediency is doubtful of multiplying very small reserves of land which at no distant period may be required for extension of adjoining Badaga cultivation, or which have sinuous boundaries or require expensive planting operations of doubtful effect (from poverty of soil or other causes) to bring them again under wood if ever they were so before. For this reason it would be as well to amend the plan on which future selections are to be based and to withdraw from settlement such of the existing selections as come under the category described. The fact has to be faced that our work in the Nilgiris so far as sholas and plateau areas generally are concerned will be expensive and for a long period unremunerative. We have numbers of small sholas which are too small to be of use even were we allowed to treat them other than as picturesque features of the landscape and the charge for protecting them including demarcation, reclearing and protective establishment constitutes a yearly expense for which we have an inadequate financial return except from grazing and occasional permit sales of fallen timber. The reserved village forests come to us for the most part bare of growth in urgent need of expensive conservation which will scarcely prove financially profitable as an investment. It therefore follows that we must be thoroughly sure of the benefits likely to accrue before we proceed with our policy on its present lines and be equally positive that necessary restrictions on the use of the areas while in their degraded conditions can be enforced on the rural population adjoining.

16. *Demarcation.*—The return for 30th June 1896 shows a total expenditure to date of Rs. 31,292 under this head for a cleared and partly re-cleared length of 1,493 miles and for the cairns and pillars built on it.

17. The character of the early work was criticised unfavourably by Colonel Campbell Walker in 1891, and an improvement effected by Mr. Rhodes Morgan was noted by Mr. Cherry in 1893–94.

Inspection Notes.

Since then the work has continued slowly but carefully. The points which came to my notice during inspection were that, in some instances, where boundaries had been altered cairns on the previous line had not as yet been removed and the unnecessary clearing of lines between adjoining forest reserves where such dividing lines are not motived by intensive working requiring sub-division into blocks.

The expense of this demarcation of profitless sholas has been already noted and no effort should be spared to reduce it. In the numerous cases where blocks are clearly defined by the shola growth itself, it is obviously sufficient to build cairns within sight of each other or at angles on the boundary when there are no revenue survey stones or these latter are insufficiently prominent to mark the boundary. The clearing of a line within the cairned limits represents not only an expensive but a serious diminution of the area of the smaller blocks. In such instances the rule of clearing within the line of cairns need not be adhered to and this view of the matter has appealed to Mr. Douglas also.

18. The most pressing work apart from the final demarcation of the various settled blocks is the preliminary demarcation of the Wenlock Downs reservation and the further selections in South-east Wynaad.

The former work has awaited the cessation of the south-west monsoon and is now being proceeded with by the agency of the ordinary establishment, but for the other selections, the appointment of a temporary Demarcation officer has been approved; since the Mudumalai Range officer with the charge of Sigur added to the special works claiming his attention in Mudumalai and Benne cannot personally carry out this demarcation with the young Foresters available, the latter being deputed to execute the improvement fellings and other timber and sandal works. Application for the services of a special Demarcation officer has been separately made and sanctioned and we should advisedly employ a middle-aged man of local experience and debit his salary to the special sub-head of forest account dealing with demarcation.

Collector's Remarks.

The matter will be attended to. Mr. Hooper does not quote instances and the District Forest-officer informs me that he is not at present aware of any.

(Intld.) H. T.

I understand that the District Forest-officer some time ago took objection to those clearings and directed the Range officer concerned on no account to make any more without reference to him.

(Intld.) H. T.

The Special Demarcation officer has been engaged and sent down to South-east Wynaad.

(Intld.) H. T.

Collector's Remarks.

Inspection Notes.

19. *Establishment.*—The staff employed at present in the district is as follows:—

	Rs.
One Ranger	125
Do.	80
Do.	50
drawing temporary salary of Rs.	80
Two Deputy Rangers	40
Three Foresters	20
One Forester, temporary ...	20

assisted by—

Two Forest Guards	12
Four do.	10
Twelve do.	8
Twelve do.	7

and 22 watchers drawing Rs. 183 per mensem—also Depôt establishments costing Rs. 78 and Elephant establishment costing Rs. 114.

The total charge including Wynaad allowance of Rs. 12 comes to a monthly sum of Rs. 1,076.

The reorganization scale proposed in 1891 and now under final sanction is as follows:—

	Rs.
One Ranger	150
Do.	100
Do.	80
Do.	60
Two Deputy Rangers	40
Do.	30
One Forester	25
Do.	20
One Reserve Forester	15
Four Forest Guards	12
Six do.	10
Eight do.	9
Twenty-two do.	8

and assuming the same Depôt and Elephant establishments are employed, the monthly cost would then be Rs. 1,150 including Wynaad allowance of Rs. 12.

20. The matter has been discussed with Mr. Douglas and after considering the works in each range it is agreed that the present staff in the Coonoor Range can be reduced to strengthen that employed in Mudumalai and Sigur. In Coonoor Range, apart from the plantation management around the settlement, the only operations in the immediate future are demarcation and general protection with the issue of permits and some fire-protection along the lower levels of the slopes. Instead of, as heretofore, the Ranger at Coonoor being assisted by Foresters at Karteri and Kotagiri and Kullar we would post Foresters at Coonoor

Inspection Notes.

and Kullar; the former to be employed entirely under the Ranger's orders for work on the plateau. This will obviate the rebuilding, at any rate for the present, of the Foresters' huts at Karteri and Kotagiri, the former destroyed accidentally by fire and the latter in a dilapidated state on a bad site.

In Mudumalai Range it is thought the Sigur works can better be controlled by the Mudumalai Range officer than as a separate Range charge, for the present at any rate. The works consist of sandal fellings, fire-protection of the Moyar reserve, general protection and issue and check of grazing permits, all of which can better be done by a young Forester controlled by the trained Ranger in Mudumalai than by the Forester unaided by such control and advice.

The improvement fellings and fire-protection in Mudumalai will require the full attention of one Forester, the elephants and timber works that of a second, and for the demarcation in South-east Wynaad a special temporary officer is requisite. The Forester released from Coonoor will therefore be required for Mudumalai. In Ootacamund a Ranger and Deputy Ranger must continue until settlement and demarcation are complete and until the working of the plantations is in a more advanced state than at present.

21. The change advocated therefore is the transfer of one Forester from Coonoor to Wynaad and the temporary employment of a Demarcation officer, but an important consideration always to be kept in view is the peculiarly unfavourable climatic conditions to which the Range establishments are exposed. The influence of the bleak plateau climate makes itself equally felt with the malaria of the Terai country in Wynaad and below Coonoor, there consequently arises the necessity for replacing sickmen at constantly recurring intervals and it will always be necessary to have ready an extra Forester for this purpose who may with advantage be permanently attached to the Nilgiri district.

The present arrangement of paying the Wynaad Range officer a salary of Rs. 80 should continue, the extra pay has reconciled the officers to the inconveniences of the place and has stimulated them in their work with good results.

Collector's Remarks.

It should be understood that the scale now proposed by the Conservator is tentative only and not in absolute supersession of that contemplated by the scheme of reorganization. The combination of the Sigur and Mudumalai Ranges under one

Collector's Remarks.

officer is, in particular, purely experimental and may not always be found to answer as well as it has done hitherto. It happens that the officers who have as yet held the double charge are well acquainted with both ranges.

(Intld.) H. T.

Noted. The District Forest-officer's instructions were misunderstood. The Range maps should have been prepared as now suggested by the Conservator. The matter is being attended to.

(Intld.) H. T.

Noted. (Intld.) H. T.

Noted. (Intld.) H. T.

Inspection Notes.

The staff, therefore, advocated is the present one supplemented by a supernumerary Forester and a temporary Demarcation officer. Comparing this with the reorganization proposed staff, it is found to be less by one Ranger and two Deputy Rangers and more by two Foresters and one temporary Demarcation officer; but it should be borne in mind that only present needs are provided for, and a minimum scale for supplying them.

22. As regards Forest Guards, those in the Ootacamund and Coonoor Ranges compare unfavourably with those elsewhere. It would appear that their work is irksome to them in this cold and damp climate, while the pay is insufficient to make the posts attractive. On the other hand it was pleasing to find such willing workers among the Wynaad Guards who have a very rough, uncomfortable and unhealthy existence.

23. *Maps.*—Each Range officer has a district map the forests in his range being alone shown. Four other district maps are kept at head-quarters each in four sheets being copies of the four range maps. It would suffice if one copy were kept showing on it all forests of all ranges and the present copies might with convenience be cut down to maps of the ranges, and this is all that a Range officer himself requires.

The office reference map of the district is on the large scale of $\frac{1}{2}$" to the mile and posted up to 30th June 1896.

The reserve maps only exist on village maps 16" to the mile and 8" scale (Paranginad and Kundahs). They have not been separately prepared. Range officers are supplied with village maps, but the forest boundaries have not been recorded by the District Forest-officer upon them. Working Circle maps comprise those of fuel plantations (Ootacamund and Coonoor) and Mudumalai.

The original forest reserve maps are part of the settlement record, but they have been detached from it and filed in the Forest office. Only copies should be so filed, the original map being an important part of the Settlement Judicial record.

24. *Natural Regeneration.*—Our experience up to the present tends to show that for the continuance of our forest we must look

Inspection Notes.

Collector's Remarks.

to the natural regeneration of the species of which it is composed and have recourse only to plantation under exceptional circumstances. In the Nilgiri district we have to deal with growth at all elevations from 1,500 to 8,500 feet with all varying aspects and exposed to all the different local climates resulting from these conditions. On the ground we find them manifested by a marked difference of species, as well as by the dimensions attained by individual trees and to enable us to treat them with any hope of assisting in their natural development the greatest care must be exercised, for we are only too apt to upset the balance of nature in such a way as to deprive some of the species of the support of others and stimulate an inferior growth which may prove not only useless but harmful in extirpating the useful trees. This is especially to be guarded against in our operations in the Nilgiris and notably on the plateau where the shola growth is being only gradually recognized as the outcome of conditions with which we are not by any means fully conversant. It is true that they are natural forests occupying clearly defined areas the nucleus of which so to speak is almost invariably on soil of the same character and similarly situated, but their extension to adjoining lands has been effected under peculiarly favourable circumstances, which once changed, are likely to result in their speedy degradation. Shola may therefore be regarded as a peculiarly sensitive and delicate growth requiring the utmost care in its conservancy. There is abundant evidence on the plateau of its gradual disappearance under the influence of fire which, if repeated, kills it slowly but surely from the outside; while on the other hand we see how the shola growth gradually extends where kept free from fire and left entirely to itself. Our first duty to it, therefore, is to keep fire from its borders and to reduce grazing on it as far as possible.

25. Felling operations in such growth should be limited to the removal of only such trees as would speedily decay in the natural course of events and even then, unless they are worth removing, it would be in the interest of the forest to leave them alone. This appears to have been the usual way the growth has been treated in the past, for there is no record of any

Collector's Remarks.

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extraction of timber from the main sholas now existing, and it is probable that the plateau timber used in local construction in the Ootacamund and Coonoor settlements was from shola land since planted up with exotic species. During the past ten years some experimental coppicing has been carried out notably at Naduvattam, but the result has not been satisfactory; the regrowth after eight years being for the most part of a noxious herbaceous species above which only occasional shoots from original tree growth show themselves.

Possibly the shola may eventually reconstitute itself, but it can only happen after the lapse of a very considerable period.

26. It follows then that sholas may be considered as forests incapable of yielding any direct return for the cost involved in their conservancy, and as this cost is in inverse ratio of their size, it will be found necessary to restrict our work to the larger ones, and afford the smaller ones only such protection as can be done without direct expenditure.

The course to be adopted for aiding natural reproduction of the other types of forest growth cannot be so succinctly stated. They comprise the ordinary deciduous species distributed according to altitude and aspect. The dimensions they attain vary with the depth of soil available and in the case of forest tracts accessible to markets, the natural distribution and qualities of the better species are altered by the demands that have been made upon their produce.

27. Speaking generally, our work in connection with these growths comprises their general protection and the avoidance of all operations which may militate against the vigorous growth of the more useful species.

We may in consequence have to stay our hand altogether when growth is thin and exposed, or when the better species cannot do without the surrounding vegetation. In other parts again we may remove sparingly certain trees, but only with the exercise of care and at such expense as to constitute a loss. In other more favoured portions we shall be able to remove much wood with advantage to the species concerned. In the latter case, we have to ensure a demand for the produce and, where this does not exist, it has to be

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created by opening up the area for facilitating removal. Under one or other of these heads, it will be found that all our deciduous forest can be classified. It must, however, be remembered that it may be advantageous not to open up a forest if, by doing so, we transfer a demand from another more accessible forest also under regular treatment as is the case when adjoining Government forests are in different districts and different circles.

28. The operations to be carried on in the majority of our deciduous forests on the Nilgiri slopes are undoubtedly selection fellings at the higher altitudes, located or coupe fellings being expedient only in favoured localities at the base of the hills. Over a very considerable area we can remove nothing for in the more steep and exposed portions the rate of growth is remarkably slow and we have no means of removing produce if it were available.

29. The main operations in hand, or likely to be carried on, are the fellings in selected blocks in Mudumalai, the selection fellings of large timber both there and in Benne, the coppicing by purchasers of small teak in the Moyar valley, the felling of sandal in Sigur, the supply of small stuff and bamboos from Kullar and Burlyar on permit.

30. The nature of the operations in the selected block of Mudumalai has been decided by the Board and Government under other advice. It must, however, be mentioned that, over a considerable area, the regrowth from former cuttings is a wilderness of mostly worthless species, and the standards have little or no value. Possibly the more useful species may establish themselves later on, but the property is leasehold, and we must avoid working too much for the eventual owner. For this reason, the improvement felling should be carried out only over the best portions, leaving the poor and dry forest to improve itself. These matters are dealt with more fully in the appendix, but being of importance are also referred to in this note as also are the selection fellings over the rest of the forest. But in connection with these latter it should be mentioned that under the writer's instructions the Range officer, Benne, has adopted a system of tapping for kino all vengai (Pterocarpus) trees before they are cut and we shall no longer waste the kino. It is understood that the yield varies up to 3 quarts, the full extract

Collector's Remarks.

Collector's Remarks.

I concur; but to be successful here, as elsewhere, adequate supervision is a *sine quâ non*. A good Deputy Ranger is required.

(Intld.) H. T.

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from a large tree, 8 feet in circumference. The weight of the dried gum is a little over 2 lb.

31. The coppicing of teak in the Moyar should be successful in every way if care is taken to retain standards and to locate the fellings in order and to rigidly protect the young regrowth from grazing and fire. The stumps should be fairly well dressed and every opportunity taken to determine the rate of growth of teak in this portion of the Wynaad, and the age at which it matures.

32. The treatment of bamboo growth is one that need not be gone into, for we have no market for our produce beyond that asked for from the Coonoor and adjoining slopes.

33. *Artificial reproduction.*—Our work in this connection in the Nilgiris is restricted to the establishment of plantations on the plateau and their renewal when the growth does not reproduce itself naturally.

The oldest of the bluegum and wattle plantations date from 40 years ago, but the majority are now from 15 to 30 years of age. In some instances the growth of bluegum has reproduced itself by coppice, with no diminution of vigor, three separate times the yield being on such occasion phenomenal as compared with that of the natural species of the country or of its own species in its natural habitat in Tasmania and Victoria. The difficulty at present is to find a market for all the exploitable produce, of which some is left standing awaiting the demand anticipated with the opening of the railway. In any case artificial reproduction, so far as existing plantations are concerned, will only be resorted to for introducing other species of Eucalyptus of more general utility than the bluegum has proved to be. It is understood that some of the species have been experimented with in the past, though the history of the operations has not come to light. Already there are large specimens of the red gum which in Australia yields a splendid timber of general use. The Jarrah Eucalyptus Marginata is well worth trying again, unless we are to consider the failure of our trial in 1862 as conclusively proving its unfitness for the climate, while the Grevillea has proved a quick grower and very useful as yielding a light and strong timber. But in all future ventures we should do well to avoid planting on poor and rocky soil notably in regions of small rainfall.

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Collector's Remarks.

At present the only planting going on is in the Badaga plantations instituted by order of Government in Board's Proceedings, Forest No. 609, dated 3rd November 1892, with a view to handing over to Badaga village communities an established blue gum forest to be worked by village agency and for the general use of the inhabitants.

On this subject the annual district report for the past year includes the following notice.

To the end of June 1896, 243½ acres were planted, of which 83 were planted twice over. Various species of Eucalyptus as also Acacia dealbata and Acacia melanoxylon; but the result is discouraging and the progress made holds out no promise of the full 500 acres being planted and ready to hand in 1897 or 1898.

The Grevillea is now being tried, it being thought likely to suit the Ebanad. It is umbrageous, and a profuse leaf shedder and of rapid growth. It is hoped it may cover the ground quickly, deposit humus and serve as nurse to other species should it be deemed necessary to plant the interspaces. But the Grevillea is a good timber, and growers of such trees ought to serve all purposes of fuel and timber, and ought to improve the soil without further planting. Should the experiment give no better results than those obtained by Mr. Morgan and since continued by his successor, some other systems must be tried if the aims and objects of the scheme are considered of sufficient importance. The Acting Conservator visited some of the plantations which are well described by Mr. Douglas as having been unsuccessful. This want of success has been partly due to bad planting, but especially to want of protection, the areas being outside reserved forest, whereas had they been within it, they would have received better care, but it would have been contrary to the plan of the scheme.

It will undoubtedly be better to re-stock the blanks in the present area before breaking new ground and before extending; it is for consideration whether we should plant up extensively with forest funds on unprotected land, leaving our expensively acquired but poor reserves without improvement.

The Acting Conservator also inspected the mahogany at Kullar at the base of the Coonoor ghât, and is of opinion the results have not been good enough to justify the

I agree with Mr. Hooper, and as regards the Baduga plantations, I propose reporting fully on the whole scheme at the close of the period of five years for which it is sanctioned. It will be time enough then to consider the future.

(Intld.) H. T.

Collector's Remarks.

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continuance of the work. At Benne and Mudumalai he also examined the trees notably of the Swietenia macrophylla which grows well until it is attacked by borers here as elsewhere in the Southern Districts. This is an evil to be guarded against if we can possibly do so. An attempt is being made in this direction by putting out the plants far apart in thick forest.

34. *Revenue.*—Under Mr. Douglas' management of the district forests, efforts have been directed to the expansion of the revenue and the reduction of the annual deficit. In the appendix to this note the present state of our work in each range is recorded and it is scarcely probable that we can expect any large increase in our returns except the demand for plantation firewood on the plateau becomes more fixed and extended, and the deciduous growth at the base of the hills is more indented upon. Sandalwood will not continue to give such good returns as in the past, and the increased demand for the smaller timber in the Moyar reserves will be counterbalanced by reduced export from Mudumalai and Benne as the supply of large trees for selection felling becomes exhausted. If the District Forest-officer can keep up his present yearly revenue, he will do well.

35. *Expenditure.*—While the revenue is being steadily protected, the expenditure is being equally well controlled. It is certain that in the past some expenditure has been incurred without good effect, and this result is in part due to the projects of the operations being insufficiently considered or their execution improperly supervised. The sandal plantation in Northern Hay is an instance in point, and our operations at the base of the Coonoor ghât, and unsuccessful Badaga plantations bear witness to the same.

It is also a matter for regret that such large areas were planted experimentally with trees such as Frenela which have not proved a success when the knowledge was equally obtainable by conducting the work on a smaller scale.

36. The appendix shows not only the cost we have incurred in the past, but it also points out what current works are justified, and, with the organisation of operations by working circles and with a

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definite policy laid down for guidance, there will be no reason for wasteful expenditure.

There will always be a proportion of our charges which will bring in no revenue return, and this especially in the case of our working the shola growth. The Kunlahs again form an immense yet bare area which like the Downs is naturally grass land and except by planting will practically never be forest, yet as pasture reserve such areas are worth study and protection and some expenditure but only on a small scale.

37. Mr. Douglas is fully alive to the importance of justifying beforehand any large expenditure and is gradually eliminating customary charges which on examination do not appear justifiable. This is notably the case with fire protection which has hitherto been to a great extent a waste of money. On the other hand, a deliberate and costly attempt is being made to carry into effect Mr. Popert's proposals to improve Mudumalai leased forests, and this will be an annually recurring charge which cannot be accurately estimated.

38. The working of the plantations under the revised scheme will necessitate increased expenditure but as it will bring in an immediate return, it may be classed as productive and be sanctioned accordingly.

It will be noted that no extensive roads or buildings are proposed. The only item of road-work is the suggested opening up of the Sigur reserve and there is a fuel slide in Coonoor Peak, the cost of which may or may not be charged against the produce brought down by it like ordinary export paths and tracks which are roughly fashioned for temporary use. As regards buildings, the subordinates' quarters, both at Mudumalai and Benne and even at Masnigudi, must be much improved, for life in such unhealthy localities is only endurable when the residence provided is a healthy one. Some further cost will be incurred on depôt buildings and compound at Ootacamund and on storage sheds for charcoal at the kilns, the present accommodation being notably insufficient at Governor's shola for the amount which accumulates even at present.

I agree with Mr. Hooper.
(Intld.) H. T.

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39. *Fire-protection.*—This matter has been much discussed with the District Forest-officer, who is convinced of the misleading character of the returns of previous work. In the Administration report for the past year he has brought this point out in relief and has recorded in the annual statement the areas specially protected separately from those given only general protection, omitting even from the latter as much as 60 per cent. of the area previously reported.

The history of fire conservancy has been studied from 1882 onwards. For 1883–84 an area of less than 1,500 acres were returned as protected for Rs. 875, whereas in 1884–85 Rs. 1,872 were spent on protecting no less than 11,700 acres. Two years later the return for 1886–87 shows 136,500 acres or over ten times the area at a cost of Rs. 3,428 or only double the charge.

The area increased yearly until 1889–90 when Rs. 2,800 in round numbers were spent on the protection of 233,170 acres. Thence onwards the area attempted has remained at 223,000 acres at a yearly decreasing cost, and now Mr. Douglas by eliminating from the returns all areas which were not really protected at all has declared that Rs. 1,922 is the cost of rigid protection of 11,500 acres while 71,723 acres were protected by an expenditure of Rs. 151. The area of rigidly-protected forest as shown by the latest district returns corresponds closely with the specially protected area returned as such in 1886–87 and with the return in 1884–85 and we may consider that, throughout the decade 1886—95, no more than these 11,500 acres were afforded any real continued protection the remaining area varying between 120,000 and 220,000 acres being given only slight, if any, protection on no definite plan with no practical result except to reduce the apparent cost of fire conservancy to a minimum in a most misleading way.

It is not contended that the moderate protection afforded to the enormous area referred to is in any way to be disapproved of or to be definitely abandoned. It cannot, however, be classed as seriously protected and for all practical purposes its protection may be considered accidental, intermittent and not worth placing on record.

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The operations proposed in the appendix are not calculated to largely increase in the next few years the area under rigid fire conservancy. As regards the general conduct of operations, it will be better to deal with each area on a separate plan and in such a way that the cost of the work in each may be ascertained, both for tracing and patrolling, while for many of the sholas it might be limited to the careful burning of the grass round them early in the season.

40. *Felling operations.*—The main departmental works of this nature to be undertaken are the selection fellings of mature marketable trees in Benne and Mudumalai, the improvement fellings in one compartment of the latter and the cutting back of deformed teak in Moyar and of sandal in the reserves along the base of the northern slopes of the Nilgiris. Separate reference is made to the improvement fellings in Mudumalai and as there shown they will represent an outlay not to be recouped by the sale of the produce removed, especially if account be taken of the cost of the intensive rigid fire-protection which the re-growth will demand

41. *Working arrangements.*—The removal of fuel and bamboo from the deciduous forests adjoining the Coimbatore district is made under permits issued by a special establishment. Elsewhere permits are distributed by the Range officers and Foresters under them for trees selected for felling in sholas for leaves, grass and for grazing.

The substitution of located fellings for the permit system is not practicable at present. So far as firewood and bamboos are concerned, the demand for the produce being comparatively small and uncertain wherever the growth in our reserves is sufficiently advanced to justify our regulating its removal by rotation fellings.

The restriction of the area over which a single permit allows cattle to be grazed is another matter which calls for consideration, though it may not be feasible pending completion of settlement to make any alteration at present in the arrangement in force whereby the payment of a grazing fee allows the cattle to graze over the reserves of the whole district. The closing of areas to grazing should only be decided upon when the condition of the

Collector's Remarks.

I fully concur and consider that any changes, however desirable, must be approached with caution and with due regard to long standing custom and prejudice.

(Intld.) H. T.

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regrowth requires it and rigid fire-protection and to prevent individual cases of hardship to village communities, the area so closed should not be so large as to preclude all accessible grazing.

42. *General protection.*—The number of forest offences reported for the district is small and has decreased in the past two years notably under the head of offences relating to grazing. This decrease has been accompan[illegible]y an increased revenue from this s[illegible]. The rest of the offences with th[illegible]ption of one fire case and tw[illegible]aries, all relate to illicit removal [illegible]ood and minor produce. The [illegible]nty of the reported cases occur in the [illegible]onoor range. It would appear that detection is easier and better here than in the Ootacamund range. The cases are of ordinary petty importance only and they should not become more numerous now that by recent Gazette notification, the public has been definitely made aware of the privileges conferred upon them by the revised rules under section 26 of the Forest Act. In the Sigur and Mudumalai ranges beyond the grazing of cattle illicitly there is no temptation to remove forest produce which has no local value.

43. *General remarks.*—The District Forest-office was examined in detail and it was found in good workable order.

The Range offices of Sigur, Mudumalai, Coonoor and Ootacamund were also inspected and report thereon communicated to the District Forest-officer, as also notes of inspection of the depôts at Coonoor, Wellington and Ootacamund. Throughout the district there was distinct evidence of complete and intelligent control on the part of Mr. Douglas to whom I am indebted for most patiently explaining everything I required to learn and for securing the information which enabled me to write the account of the forests shown in the appendix.

(Signed) E. D. M. HOOPER,
Ag. Conservator of Forests,
Southern Circle.

The Assistant Accountant-General has since held his annual inspection of the District Forest office and pronounced favourably on its working. He found nothing requiring to be brought to the notice of the Board, and his report consisted merely of some suggestions on minor details communicated to the District Forest-officer.

(Intld.) H. T.

Endorsement by H. TREMENHEERE, Esq., Acting Collector, Nilgiris, dated 23rd November 1896, Ref. on Cur. No. 187-F.

Forwarded with notes.

THE NILGIRI FORESTS.

Forest Conservancy on the Nilgiris under varying aspects and with fluctuating success has, from the first, played an important part in general administration. Long before Europeans settled on the hills, large areas occupied by Badagas had been denuded and the District Manual describes how, within a few years of the establishment of Ootacamund itself, the surrounding wood lands were threatened with ruthless destruction at the hands of the early settlers and how the authorities in vain sought to arrest the evil Not only were efforts made to preserve valuable timber, but in the title-deeds of lands granted by Government, a clause was inserted compelling the grantees to make good, by planting, all vacancies caused by felling In 1837, foreseeing the gravity of the consequences to the wood and water supplies, Government ordered that under no circumstances should useful or ornamental trees be cut down within settlement limits, and that no other trees should be felled without previous selection and special sanction. Thus arose and proceeded a regular contest between forethought and reckless improvidence, with the result that, in 1852, the mischief still continued. In that year was sanctioned the first Forest Conservancy Establishment consisting of a Forester and six peons and inadequate though it was, this small staff, under the able and energetic direction of the well-known Collector Mr. Thomas, was able to do some good as will be shown further on.

Meanwhile, two interesting events had occurred, events that have led to important results already and which may be destined to exercise material influence on the future prosperity of the Nilgiris. These were the introduction, in 1840, of the *Acacia melanoxylon* and *Acacia dealbata*, and, in 1843, of the *Eucalyptus Globulus*. These trees appear to have speedily attracted notice, and through the exertions of Messrs. E. B. Thomas, McIver, Captain Campbell, Dr. Wight, Mr. J. Sullivan, and Captains Allardyce and Ouchterlony much information had been published regarding them and other suitable exotics by 1855, in which year, it is recorded, several plantations were opened in Ootacamund by private enterprise. In 1856, Captain Campbell formed the first Government plantation at Bandy shola near Wellington. About the same time or very soon after, Mr. E. B. Thomas began planting Australian trees in Ootacamund, filling up blank spaces and refilling vacancies in some sholas. At the same time, Captain Campbell's operations progressed satisfactorily and, in 1860, Mr. Thomas formed the Government plantations at Marliamund and Snowdon, which are therefore the oldest in the station, though Aramby has generally been so considered. Meanwhile private plantations had no doubt multiplied, but of these there is no trustworthy record. In 1857, Major-General Morgan is believed to have imported seed of the Blue Gum from Australia, from which he raised 150,000 plants. Of these, he planted 70,000 and distributed the rest about the hills. At this time, plants were still scarce, and private persons obtained them for the most part from the Arboretum in the Government Gardens. The ordinary price of Blue Gum plants was 12 annas each and wattles *(Acacias)* fetched 4 annas. Thus the Australian plantations had become an established success before either the Forest or "Jungle Conservancy" Department had entered the field.

To return to the history of general Conservancy. Although a small staff had been sanctioned in 1852 to strengthen the hands of the Collector, yet, as was to be expected, things were still found in an unsatisfactory state when Dr. Cleghorn, the first Conservator of Forests, reported on the Nilgiris in 1858. Plantations had got beyond the experimental stage and even the work of the preventive officers, thanks to Mr. Thomas, had not been altogether barren of results, for, the Conservator reported: "I do not hesitate to affirm with truth that but for his (Mr. E. B. Thomas') exertions, the neighbourhood of Ootacamund would have been denuded of its remaining beautiful sholas long since." Various suggestions were made in this report, but no practical result followed for another couple of years.

In 1860, at the instance of the Collector and the Conservator, Government passed a set of rules for the better protection of the Nilgiri woods and forests and sanctioned an increased establishment. Soon afterwards Major Morgan, Deputy Conservator of Forests, was placed in charge of the Nilgiri sholas, plantations, &c., in addition to the Mudumalai, Benne and Sigur forests, which about this period fell under the regular control of the Forest Department, Mudumalai being transferred from the Public Works Department and leased for 100 years from 1863 onwards from the Tirumalpad of Nilambúr, and Sigur resumed from the hands of unscrupulous contractors who had well nigh ruined the forests. At the time, however, and, in fact, until 1872, Sigur appears to have been attached to the Coimbatore forests and worked in conjunction with the Satyamangalam tracts.

The Forest Department appears to have then formed the plantations of—

Aramby.	Sheffield.	Brooklands.
Governor's shola.	Madana.	

and the forests of Mudumalai and Sigur were still exploited for the Ootacamund and Mysore markets, the former for its timber and the latter for its Sandalwood. The small Mudumalai teak plantation was also opened out by Major Morgan in 1868-69. The Benne plantation was begun shortly before the Sigur range was attached to the Nilgiris in 1872, and the Sandalwood plantation in the Northern Hay reserve was opened in 1872-73.

In 1869, after the creation of the Nilgiri Commissionership, the plateau and its plantations were handed over to the Jungle Conservancy Department with a special establishment of its own entirely under the control of the Commissioner. In September of that year, Major Jago was appointed special officer under the Commissioner with an increased establishment costing Rs. 732 per annum more than formerly. The Forest Department continued its operations in the forests of Wynaad and Coimbatore, and the Jungle Conservancy Department devoted itself mainly to plantation work. It added to those already opened the plantations of—

Baikie.	Huppattie.	Blackbridge.
Norwood.	Andi.	Old Forest.
Arnakal.	Cully.	Rallia.
Governor's shola (part).	Chowghat Cully.	Newman.

The area was thus raised from 191 acres handed over in 1869 to 919 acres in 1874–75, when under the orders of the Government of India the sholas and plantations were again transferred to the Forest Department, and have remained in its charge ever since. During the interval that had been passed under the control of Jungle Conservancy the revenue derived from natural wood lands had risen somewhat and their management had, on the whole, improved; but it is on record that the destruction of forests continued and their alienation under the waste land rules had, in some cases, been injudicious or excessive. Some years later, this state of things attracted notice and a Commission was appointed in 1878 to report on the whole question. Government ultimately resolved in November 1878 that no applications for shola or forest land should be entertained until the district had been fully reported on and a future policy decided. The forest operations in Mudumalai, &c., proceeded much as before, but shortly after the addition of the Sigur range in 1872, the Méttupálaiyam range was withdrawn.

On the plateau, the department proceeded to increase the area of plantations and added those of—

Chemanguli.	Koolie.	Rock.
Muthânad.	Bathri.	Tippakuchi.
Part of Arambi.	Deva shola.	Little Rallia.

It may here be mentioned that for some years the Cinchona plantations were in the charge of the Nilgiri Forest Officer.

The history of forestry in the Nilgiris has now been traced to within a few years of the time when Dr. Brandis (then Inspector-General) arrived to investigate the position and to formulate suggestions for general reorganization. On his advice, many changes were introduced, notably, the Forest Act came into force and the establishment was properly organized. During the fourteen years that have since elapsed, matters have improved and the operations of the department developed. With the exception of a comparatively small area, the forest reserves of the district have been selected, settled and demarcated; working plans, at first preliminary and more recently permanent, have been drawn up for the plantations, and the Mudumalai and Benne forests, on the advice of two different Conservators, are about to be worked under a systematic course of management. Fire protection has, to some extent, been successful, the district has been parcelled out into ranges and sub-ranges and no land can be alienated any where in the district without previous reference to the department for inspection and report.

Such is the history of Forest Conservancy as kindly sketched for me by Mr. Douglas, Deputy Conservator, the present Nilgiri District Forest-officer. I would merely add that the reservation of areas under the Forest Act has proceeded gradually subject to a policy which at first was not very clearly defined, but later on became so when the connection between our operations and the villagers' requirements had been inquired into and decided. At first, the Revenue Settlement preserved from alienation certain tracts which would inevitably have come under patta holding by the Badagas and many of these became known sebsequently as village forests. Their management was brought under discussion between 1880 and 1890, but in the latter year the Government issued an order declaring that all areas to be conserved should be settled as reserved forests. It has therefore followed that the areas in question have for the most part come under reservation and since they naturally adjoin village cultivation, their settlement has proved to be a lengthy operation.

At present the district forests are distributed over four charges known as the Ootacamund, Coonoor, Sigur and Mudumalai ranges, and this arrangement has been in force since 1882. The Ootacamund range includes the sholas, plantations and downs in Todanad and the main waste areas in the Kundahs. The Coonoor range includes the Kótagiri, Coonoor and Melur portions of the plateau, as also the slopes draining into the Bhavâni river. The Mudumalai range consists of those forests on the Wynaad plateau at 3,000 feet which are to the north and west of the Moyar river, while all to the east and south of that stream together with the northern slopes of the hills are included in the Sigur range.

The revenue and expenditure of the Nilgiri district forests since the reorganization has been as follows:—

Year.	Total.	Sub-heads.	Total.	Year.	Total.	Sub-heads.	Total.
	Rs.	*Revenue.*	Rs.		Rs.	*Expenditure.* A	Rs.
1882-83 ..	28,452	I. Timber ..	1,42,502	1882-83 ..	35,695	I. Timber by Governemnt ..	38,419
1883-84 ..	43,724	Fuel	2,23,335	1883-84 ..	42,914	Firewood do. ..	1,59,467
1884-85 ..	40,883	Bamboos ..	..	1884-85 ..	49,640	Bamboos do. ..	..
1885-86 ..	39,045	Sandalwood ..	88,244	1885-86 ..	60,612	Sandalwood do. ..	21,008
1886-87 ..	40,674	Grass, &c. ..	13,296	1886-87 ..	76,451	Grass do. ..	7,195
1887-88 ..	39,076	II. Timber ..	45,618	1887-88 ..	63,760	II. Timber, &c., by consumers, &c.	21,891
1888-89 ..	51,101	Fuel	53,525				
1889-90 ..	41,339	Bamboos ..	28,640				
1890-91 ..	47,612	Grazing ..	39,857	1888-89 ..	61,699	III. Confiscations	59
1891-92 ..	47,846	Minor produce.	13,253				
				1889-90 ..	66,064	V. Rent of leased forests ..	58,500
1892-93 ..	*65,340	III. Confiscations ..	565				
				1890-91 ..	63,530	VI. Purchase of cattle	2,300
1893-94 ..	†52,767	V. Fines	32	1891-92 ..	58,443	Feed, &c., of cattle ..	20,366
1894-95 ..	†61,464	Refunds ..	1,523	1892-93 ..	* 76,950	Stores	7,926
1895-96 ..	†69,300	Other sources ..	17,733				
				1893-94 ..	† 71,711	VII. Roads, &c.	25,133
				1894-95 ..	† 74,932	Buildings	17,403
				1895-96 ..	† 84,540	Other works	1,191
						VIII. Demarcation	32,511
						Forest settlement	6,262
						Surveys	3,945
						Working plans	421
						Sowing and Planting ..	80,179
						Fire protection	29,635
						Other works	12,813
						IX. Refunds	1,299
						Law charges	756
						Other do.	10,467
							5,59,146
						B	
						I. Salaries	2,65,809
						II. Travelling allowances ..	49,002
						III. Contingencies	12,784
							3,27,595
Total ..	6,68,623	Total ..	6,68,623	Total ..	8,86,741	Total ..	8,86,741

* For 15 months. † Forest year.

Revenue.—During the years immediately following the reorganization, the Revenue continued as before to be in the main derived from the sale of timber collected departmentally and of timber and fuel removed by consumers. From 1884 onward the departmental sales became much reduced, though since 1892 they have again become important. From 1884 the receipts increased from sale of fuel in depôt and departmentally, at the expense of the revenue from its sale on permit. The revenue from Sandal has of late shown some improvement but it will not for a long time attain the figures of former years. Bamboos are now removed by purchasers in yearly increasing quantities and grazing is bringing in a gradually improving revenue. It should be also noted that under Other Sources a sum of over Rs. 3,000 has been recovered for three years in succession from sale of shooting licenses. Grouping the total revenue under main heads we find as follows:—

Head.	Source	Amount.
		Rs.
I.	Departmentally collected produce	4,87,877
II.	Produce collected or removed by purchasers	1,80,893
III.	Confiscated produce	565
V	Other sources	19,288

Expenditure.—After the reorganization larger grants were made in the Nilgiri district, the annual expenditure on Works absorbing the forest revenue year after year until recently when receipts have been worked up under Timber and Grazing. From the following abstract it is seen that Rs. 2,10,000 have been expended on improving the forests by operations charged under A.VII. and A.VIII.

Head.	Nature of Charges.	Amount.
		Rs.
I.	Charges on departmental produce	2,26,089
II.	Charges debitable to produce removed by consumers ...	21,940
III.	Confiscations	59
V.	Rent of leased forests	58,500
VI.	Feed and keep of live-stock	30,592
VII.	Roads, buildings, &c.	43,727
VIII.	Demarcation, fire-protection, surveys, &c.	1,65,766
IX.	Sundries	12,422

The apparent net value of timber departmentally collected, being the excess of R.I-a. over A.I-a., is Rs. 1,04,0[illegible]. But the real net profit can only be reached after deducting a percentage of establishment charge[illegible] which would so reduce the balance referred to, that the profit due to Mudumalai, would scarcel[illegible]2 at all, cover the charges on it, chiefly on account of rent which amounts to Rs. 58,500, so th[illegible]whatever our previous revenue from it may have been for the period under review, this forest h[illegible]been a source of expense.

Of expenditure under A.VIII the main items are—Fire protection, Rs. 30,000; Plantations Rs. 80,000; Demarcation, Rs. 32,000. The plantation charges represent our extensive experiments with exotics notably the Frenela which has proved commercially unprofitable.

SIGUR RANGE.

The Sigur range is bounded on the north by Mysore from which it is separated for a considerable distance by the Moyar river, on the east by the Satyamangalam taluk of the Coimbatore district; on the south by the upper slopes of Todanad rising up to about 5,000 feet at Kalhatti and to the plateau at abo[illegible]t 6,500 feet on the banks of the Pykara river; on the west by the forests of the Mudumalai range.

Apart from the small areas of shola growth found in the ravines on these slopes, the forests of the Sigur range may be described as a continuous deciduous growth stretching across the valley of the Moyar. Village areas are dotted here and there at a considerable distance from each other, the field cultivation being restricted to minor crops. These areas were demarcated and excluded from the reserves at the time of settlement. The inhabitants are chiefly Kasubers, who mainly depe[illegible]d upon the Forest department for their livelihood which they secure by bringing out forest produce. On the whole the country may be described as pastoral providing fodder not only to the local herds, but also to cattle coming in numbers from other parts of the District and Mysore at certain seasons of the year. The ordinary type of forest met with in this valley consists in the main of a sparsely distributed irregular Teak growth up to 40 feet, *Acacia catechu*, *Acacia sundra*, *Anogeissus*, *Terminalias* (chiefly *Terminalia Belerica* and *Terminalia Chebula*). Towards the ghâts and on rising ground there is also very characteristic growth of *Grewia tiliæfolia*, while bamboos of the larger kind fringe the water courses. There is also a widely distributed and important growth of Sandal along the lower slopes of the hills extending all over the plains as far as the river.

Reserves.—The following areas have specially been taken up for Conservancy under the Forest Act:—

	Acs.		Acs.
Sigur	49,484	Northern Hay	3,998
Kalhatti	5,005	Moyar	13,238
Bokkapuram	2,008	Kalmalai	896
Singara	1,970	Avaraihalla	6,425
Do. addition ...	379		

The total area of these blocks amounts to 63,403 acres, and includes most of the forest of the locality, all that remains being unimportant and the private property of estate owners or of small cultivators.

The Sigur Reserve.—This forest comprises the eastern portion of the range and spreads up the slopes of the Nilgiris starting from their base in Kodanad to Kalhatti on the Sigur ghât road; it is bounded by the Kalhatti stream until it joins the Moyar which forms its northern boundary. The area thus enclosed is traversed by the Sigur ghât road also by a cart-track running from Chockanhalli to the Mookurtti stream [illegible]ich was made for extracting minor forest produce. The only village areas enclosed in the reserve are Choc[illegible]nhalli and Gathekutti. The reserve was notified for settlement in February 1885, May 1892 and July 189[illegible]te the [illegible] forest in Board's Proceedings, No. 527, dated 9th Au[illegible] notified as reserved throughout, but the lines joining these latter are not al[illegible]ncreated with [illegible]

reserves or follow water-courses where lines are unnecessary. The expenditure under this head in the past, so far as can be gathered, has amounted to Rs. 215, and it is calculated that an additional sum of Rs. 200 will be required for the completion of the work, including cost of cairns of the new pattern, and thereafter a yearly sum will be required for annual re-clearings.

This forest has not been strictly conserved at any time, partly from its isolated position and also from there being no demand for the ordinary timber produce. It has, however, been a continuous source of profit from the extraction of sandalwood and minor produce as well as from grazing. The yearly gross and net revenue from sandal as far back as can be traced is shown in the margin.

Year.	Sandalwood. Gross revenue.	Net revenue.
	Rs.	Rs.
1889-90	5,616	3,760
1890-91	11,229	9,655
1891-92	12,315	11,458
1892-93	...	...
1893-94	12,470	12,224
1894-95	5,270	4,551
1895-96	6,564	5,714

As regards sandal it is understood that absence of communication has led to the concentration of the felling to such an extent that immature wood has been cut out, while in more distant portion some larger wood could with advantage have been removed. The quality of the sandal grown is fair. Figures for other produce are not available for the reserve. The chief items of minor produce are gallnuts, deer and sambur horns, honey, wax, tamarind, sheakoy and some avaram bark.

The forest is resorted to for grazing by herds from Mysore and from the Nilgiri plateau. The income from this source is gradually improving.

The establishment directly employed on the protection of the reserve is one Forest Guard on Rs. 10-6-5 per mensem. He is stationed with a temporary watcher at Chockanhalli and it is probable that a second Guard will be requisite when sandalwood felling is carried on in the more distant portion of the forest. The works now proposed are the regulation of the sandal fellings and the completion of the demarcation.

The Kalhatti slopes reserve.—This reserve covers an area of 5,005 acres lying to the west of the Sigur river, and comprises the lower slopes of the Hills at this point as well as the plains as far as the Masnigudi road. On the west it is bounded by the Westbury estate and Bokkapuram reserve. The growth is similar to that of the southern portion of the Sigur reserve. It contains some sandal, but it is not much indented upon at present for this produce. It is traversed for a short distance by the road from Masnigudi and by a bridle-path to the Westbury estate.

This block was proposed for reservation in Board's Proceedings, No. $\frac{730}{F.\ 141}$, dated 4th March 1885, and finally settled in notification No. 8[illegible], dated 5th March 1886.

It is demarcated with cairns and cleared lines, the cost of this operation having amounted to Rs. 213. No produce is extracted from this reserve there being at present no demand. Cattle grazing is permitted, the herds that resort to it belonging to Bâdagas from above and also from the Westbury estate and village areas in the neighbourhood. This reserve is protected by a Forest Guard living at Masnigudi. It is not proposed at present to undertake any operations in this block.

The Bokkapuram reserve.—This reserve of 2,008 acres adjoining Kalhatti on one side and Singara on the other penetrates to the plateau at one point. Its lower boundary is at the foot of the hills but does not extend into the plains. It was notified for settlement on 20th February 1885, and was finally declared reserved forest in Government Order, No. 188, Revenue, of 13th March 1886. It includes one enclosure inhabited by Kusabers, who cultivate small holdings and [illegible] few cattle. The block has been demarcated with cairns and cleared lines at [illegible] 1,970
... ... 2,008
is traversed by the pathway from Bokkapuram up the slopes towards Sho[illegible] 5,005
and in parts precipitous. The growth is poor with some shola at [illegible]
demand for the produce and no revenue is recovered except from produce grown in this circle towards
above and from Bokkapuram on the plain. The reserve is [illegible] extraction of mature or dying sanda
Masnigudi. There are no works proposed in connection with [illegible]gement for the systematic conservation of
The Singara reserve.—This lies to the west of Bokkap[illegible] producing area should be divided off from
from a peak on the Nilgiris (7,200 feet) to a point we[illegible] a base line which will form a convenient cart-
Masnigudi where it connects with the Singara addy[illegible]d towards the hills. In these compartments
lower slopes there is some sandal while on the plains t[illegible]. Each area gone over should be brought under
It was notified for settlement on 20th February 18[illegible]ions will continue, the demarcation completed and
No. 188, Revenue, dated 13th March 1886. It [illegible]y depôt and rest camp for sandal work will be
lines at a cost of Rs. 156. There are no roa[illegible]ockanhalli to Sirur and this is proposed for early
belonging to the adjoining Singara estate and b[illegible]t-house for an inspecting officer will be required about
demand for the produce though some minor pr[illegible]mmunication will have to be opened when the forest
wood extracted, the standing stock of which r[illegible]s two forest guards will be required, one stationed at
proposed for this reserve at present. [illegible]d for our labour we shall depend on the Kusabers who
The Singara addition reserve.—The sm[illegible]Hutti and Gathehutti. The annual revenue estimated
continuation of it towards Masnigudi. It is[illegible]0, made up of Rs. 4,000 from sandal, Rs. 1,000 fro[illegible]
fair growth which i[illegible] Blank *Acacias* [illegible]s sources. The return from sandalwood will be decreas[illegible]
Au[illegible]1893 and fin[illegible]vernibe made up by our receipts from timber, &c. The [illegible]
[illegible]line clearing for the sandalwood compartments, their [illegible]
[illegible]the final demarcation of the reserve is complete, o[illegible]
[illegible]will be requisite also for the roads and buildings refer[illegible]

Forest Guard of Masnigudi. There is no work proposed at present in connection with this reserve.

The Northern Hay reserve.—This block was notified for reservation in Government Order, No. 226, dated 20th February 1885, and reserved in Government Order, No. 888, dated 12th October 1886. It occupies the south-western corner of the range and includes the spurs of the hills to the north of the Pykara river which bounds it from the Cinchona plantations to the Moyar. It extends to the Singara reserve at its highest point. Its eastern boundary is the stream flowing to Northern Hay estate which bounds it on the north along with the Moyar reserve. On the west it is bounded by the Moyar estate and the Moyar river. On the upper level the growth is poor, the hills being precipitous, but on the lower slopes and towards the Moyar river it is more promising and thicker, a good growth of teak and jungle woods being noticeable and a decided improvement on what is found in the other reserves stretching from the slopes into the plain. This block also contains a sandalwood plantation originally made in 1872-73, over an area of 21 acres, at a cost of Rs. 1,742. It was specially protected for a series of years but eventually was declared to be abandoned as a failure and at present there are only a few trees of 18 inches in girth, in good order and promising and it is still fire protected as far as possible. This reserve was proposed for settlement on 20th February 1885 in Government Order, No. 888, dated 12th October 1886. It is demarcated with cairns and lines have been cleared around private property and wherever the river is not the boundary. The cost of this is estimated to have been Rs. 134. There is a pathway leading to the hills from the Northern Hay estate and a stream of water diverted from the Pykara river above the middle Falls also descends to the same property. No revenue is recovered from sale of produce in this block, though it is resorted to for grazing to a small extent on payment. It is looked after by the Forest Guard of Masnigudi. It is not proposed to undertake any operation in this block for the present.

The Moyar reserve.—The Moyar reserve lies to the north of the range. It forms a strip of forest extending from one end of the range almost to the other along the banks of the Moyar river. It adjoins the Sigur, Avaraihalla and Kalamalai reserves. The growth consists chiefly of Teak, *Anogeissus*, *Terminalias* (chiefly *T. Belerica* and *T. Chebula*), *Acacias*, *Phyllanthus*, *Dalbergia latifolia* and Bamboo. This block contains also a small amount of sandalwood. It was notified for settlement in Government Order, No. 226, dated 20th February 1885, and finally declared as reserved forest in Government Order No. 188, Revenue, dated 13th March 1886. It is demarcated with cairns and cleared lines. The expenditure under this head in the past has amounted to Rs. 157 and it is calculated that a very small sum will be required for annual re-clearings. There has always been a demand for dry teak which is found in small quantities throughout the reserve. The produce is removed by villagers of Mysore, who fell and drag the timber to wayside depôts where it is passed by the Range officer. The timber is chiefly required for building purposes and is generally of small scantling. The revenue realized from this source in the past three years has been as per margin.

	Rs.
1893-94	270
1894-95	352
1895-96	662

There is also revenue recovered from the minor produce found in the reserve. A departmental collection of gallnuts made last year yielded 28 maunds, but this was an exceptionally [illegible] season. There is also some honey wax and thorns. The Forest also contain a fair amount [illegible] Vengai, above 6 feet girth, which it is proposed to fell. The reserve is resorted Northern Hay and Leighwood estates, and also from the village arts of the district and from Mysore.

'he Government road which runs from Masnigudi to Tippa-
'as are enclosed though there are a few Betta Kurumbers'
'en are solely dependent on the department for work,

Total, Revenue ..	9,314	11,b[illegible]

ection of the Moyar reserve is restricted to one charge the other smaller slope reserves in the

* The revenue under R. II. (*d*) is recovered from issue of p[illegible]rd who lives in Masnigudi.

a area being generally burnt over each year

MUDUMALAI [illegible]ality of the grass for their cattle. Of late

This range occupies the north-western corner of [illegible] been made in the portion of the reserve
Mysore, the Malabar district, the Moyar river and the C[illegible]n fairly successful, the block protected
Wynaad plateau and in parts the country is fairly le[illegible]nother and by one of the streams joining
heights of a few hundred feet and in some cases attain a[illegible]
a forest region extending into Malabar and Mysore and[illegible]vs:—
areas included in this range are the Mudumalai and [illegible]ckwood, as are fit for the market and
Reserved lands under the Forest Act, comprising toget[illegible]n this connection it will be convenient
following Reserved forests:— [illegible]anwhile a more thorough examination
[illegible]neral treatment of the reserve. It is
[illegible]d to demarcate the camping groun[illegible]

addition was notified for settlement in Board's Proceedings, Forest No. 409, dated 23rd July 1886, and became reserved forest in Board's Proceedings, Forest No. 185, dated 29th March 1887.

The Kalmalai reserve.—This is a similar addition to the main Moyar block to the south-west of Masnigudi on both sides of the road leading to the Northern Hay estate It contains a thin growth of teak, *Terminalias*, *Acacia catechu* and bamboos. In the centre is an enclosure demarcated out of the reserve wherein certain Kusabers cultivate ragi and gram and also graze cattle. It is demarcated with cairns and cleared line which cost of Rs. 155.

The Avaraihalla reserve.—This block, to the east and north of Masnigudi, covers an area of 6,425 acres on both sides of the Avaraihalla stream between the Sigur and Moyar reserves which it adjoins. It was notified for settlement on 17th July 1893 and declared Reserved Forest in Board's Proceedings, Forest No. 52, dated 9th July 1894. Within the reserve are the sites of villages deserted long since. The growth is poor throughout and, in this respect inferior to that of Sigur and Moyar. The trees represented are *Acacia*, *Anogeissus*, and inferior teak, seldom exceeding 25 feet in height also some sandal along the stream. It is demarcated with cairns and a cleared line, the cost having been Rs 227. This reserve is traversed by the high road from Sigur to Tippacadu for a distance of two and-a-half miles in its southern portion where it adjoins the Singara addition reserve and nearly touches the Kalhatti slopes reserve. No timber is extracted from the block, but a very small quantity of bamboos for local consumption is taken out, also gallnuts. It constitutes a favourite grazing ground for Masnigudi cattle. It is not intended to execute any works in this reserve at present.

From the foregoing remarks it is evident that in the immediate future work will be only carried on in Sigur and Moyar reserves, though minor produce collections will extend to the smaller blocks out in the plain and some sandalwood may be cut out from the lower levels of the Nilgiri slopes.

The grouping of the reserve blocks of this Range into Working Circles may be carried into effect at once, taking into consideration the geographical portion, their general nature of their stock and the demand for their produce.

The reserves would thus be grouped as follows :—

	Acs
Sigur Working Circle.	
Sigur reserve	49,484
Moyar Working Circle.	
Moyar reserve	13,239
Do addition	342
Kalmalai	896
Singara addition	379
Avaraihalla	6,425
Hill Working Circle.	
Northern Hay	3,998
Singara	[illegible]
Bokkapuram	1,916
Kalhatti	2,008
	5,005

Sigur Working Circle.—Until a demand arises for the [illegible] at the [illegible] from gr[illegible] is prot[illegible]produce grown in this circle towards the Moyar river, our efforts will be chiefly directed to [illegible]ildings and own a and the roots of trees already removed. Some arrang[illegible] with the extraction of mature or dying sanda [illegible]es at a cost of Rs. 76. It this species must be devised and the sandal-p[illegible]apur gement for the systematic conservation of Sholur. The [illegible] the rest of the reserve, selecting for this purpose [illegible]well producing area should be divided off from track from which compartment lines will ext[illegible]ditio, a base line which will form a convenient cart-fellings will be eventually made in rotation [illegible]nd towards the hills. In these compartments rigid fire-protection. Minor produce collect[illegible]18[illegible]. Each area gone over should be brought under general protection enforced. A temporar[illegible]t ions will continue, the demarcation completed and constructed on the cart-track from Ch[illegible]ad[illegible]y depôt and rest camp for sandal work will be execution. It is possible also that a res[illegible]bockanhalli to Sirur and this is proposed for early the middle of this reserve and lines of c[illegible]-house for an inspecting officer will be required about has been more studied. For these work[illegible]mmunication will have to be opened when the forest Chockanhalli and the other at Sirur an[illegible]s two forest guards will be required, one stationed at live at Chockanhalli, Goora Gounden [illegible]d for our labour we shall depend on the Kusabers who from this Working Circle is Rs. 5,5[illegible]0, made up of Rs. 4,000 from sandal, Rs. 1,000 fro[illegible] Hutti and Gathehutti. The annual revenue estimated grazing and Rs. 500 from miscellaneou[illegible]s. The return from sandalwood will be decreas after three or four years and the produ[illegible] sources. thereafter average from 2 to 4 tons per annum and

Moyar Working Circle.—The produce extracted from the Moyar Working Circle at present consists of dry teak removed by purchasers to Mysore, the minor produce consisting of gallnuts. The revenue from these sources amounts to Rs. 1,600, to which must be added the receipts from grazing amounting to Rs. 700. The operations to be carried out are the removal of full grown valuable trees which are anticipated to increase our revenue to the extent of Rs. 2,000 at a cost of Rs. 500, so that roughly speaking we may expect a return of Rs. 4,000 from the Circle. The object of our operations will be the improvement of the growth so soon as we have an accurate record of its present state and this cannot be defined at present with any accuracy. The area now under fire-protection must be specially examined to trace any good results that may have been obtained and the operation should be more rigidly carried out in this particular area. The expenditure of this Working Circle will amount to from Rs. 500 to Rs. 1,000 per annum including the cost of fire-protection, selection fellings, re-clearing of lines. This Working Circle can best be supervised from Masnigudi, the head-quarters of the range, where the officer in charge and forest guard will both live. It might be advisable to substitute a watcher at Masnigudi and transfer the forest guard to Goora Gounden Hutti, which is an enclosure between Avaraihalla and Moyar, near the river.

The Hill Working Circle.—Our work connected with the reserves forming this circle will at present be limited to general protection and the formation of sandalwood compartments from each of which in rotation dried trees and roots should be removed, the operation being followed by rigid fire-protection and exclusion of cattle for at least several seasons. The revenue to be derived from the Circle will not exceed Rs. 1,000. Subsequently it may rise from an increased supply of sandal and timber from Northern Hay to Rs. 3,000 per annum while the expenditure directly debitable will probably extend from Rs. 200 to Rs. 1,000. In this connection, it may be noted that it will be unnecessary to keep a broad line cleared between adjoining reserves except as isolating fire lines or compartment lines later on. This Working Circle can well be supervised by the guard at Bokkapuram where a hut should be made for his residence. The Kalhatti guard is mainly employed on the Ootacamund plateau, his chief work for the Sigur range, being the check of cattle grazing. It is for consideration whether it could not be better supervised from the Ootacamund range.

Sigur Range.—The revenue and expenditure of the range for the past two years has been as follows :—

Heads.	Revenue. 1894–95.	Revenue. 1895–96.	Heads.	Expenditure. 1894–95.	Expenditure. 1895–96.
	Rs.	Rs.		Rs.	Rs.
I. (*d*) Sandalwood	5,271	6,564	A. I. (*d*) Sandalwood ..	719	820
(*e*) Minor Produce	336	531	(*e*) Minor Produce ..	312	113
II. (*a*) Timber	562	809	II. Timber, &c. ..	287	286
(*b*) Fuel	31	36	VII. (*a*) Roads	..	60
(*c*) Bamboos	100	113	(*b*) Buildings	203	100
(*d*) Grazing *	1,473	2,361	(*c*) Other works ..	..	20
(*e*) Minor Produce	184	341	VIII. (*a*) Demarcation ..	642	394
III. Confiscations	53	..	(*e*) Planting	1	..
V. (*c*) Other sources	1,304	775	(*f*) Fire-protection ..	288	310
			IX. Other charges ..	906	649
			Total, A ..	3,358	2,752
			B. I. (*c*) (*d*) Salaries	960	835
			II. (*c*) Travelling allowances	140	125
			III. (*e*) (*f*) Contingencies ..	20	51
			Total, B ..	1,120	1,011
Total, Revenue ..	9,314	11,530	Total, A and B ..	4,478	3,763

* The revenue under R. II. (*d*) is recovered from issue of permits which allow grazing throughout the district.

MUDUMALAI RANGE.

This range occupies the north-western corner of the Nilgiri district and is bounded by Mysore, the Malabar district, the Moyar river and the Ouchterlony valley. It forms part of the Wynaad plateau and in parts the country is fairly level though hills rise in all directions to heights of a few hundred feet and in some cases attain a considerable elevation. It is essentially a forest region extending into Malabar and Mysore and it is not much frequented. The main areas included in this range are the Mudumalai and Kumbarakolli leased forests treated as Reserved lands under the Forest Act, comprising together an area of 49,056 acres and the following Reserved forests :—

		Acs.
Benne		10,317
Do. addition		724
Gadsbrook		230
Ammankaval		563
Cherambadi		1,983

Further reservation is under contemplation in South-East Wynaad, the names and probable areas of blocks being as follows :—

	Acs.
Rockwood	928
Cherambadi addition	2,107
Ammankaval addition	2,330

The Mudumalai forest.—This was originally held on a lease for 99 years from 1st October 1863 on a yearly payment of Rs. 3,500 to the Nilambur Tirumalpad. This was revised in 1891 to include an additional tract of 3 square miles in extent to the south-east. Some of the conditions contained in the previous agreement were modified or cancelled and a fresh clause inserted agreeing to the renewal of the lease for 50 years after the expiry of the original period in 1962, the rent being raised to Rs. 4,500 a year.

The boundaries of this forest are as follows :—

North.—The Mysore territory.
South.—Gúdalur desam, Sree Madura desam and Cherumali desam.
East.—The Mysore territory and Todanad boundary.
West.—Boundary of Mumad amsam and the Malabar district, Wynaad taluk, Ganapathy Vattan amsam.

The boundaries of the Kumbarakolli extension are—

North.—The Pithurhulla.
South and East.—The Moyar river.
West.—Settlement Nos. 4 to 8, 9, 10 and 11 of Gúdalúr desam.

All that is known of the early working of this forest as well as its condition is recorded in the inspection reports by Mr. Gamble, Conservator of Forests (Board's Proceedings, Nos. 271 of 27th January 1885 and 48 of 1st February 1887) ; by Mr. Cherry, Conservator of Forests (Board's Proceedings, No. 827 of 7th December 1893) ; by Mr. Popert (Board's Proceedings, No. 174 of 4th April 1895). The first attempt at regular working was proposed by Mr. Gamble on the occasion of his first visit but, for various causes, the intensive working which he prescribed was not carried out except in a very slight measure. Mr. Popert's suggestions have now to be given practical effect to. The forest occupies the north-east corner of the range and projects northward towards Mysore. In fact the northernmost part including a portion of the block under strict conservancy is claimed by Mysore, and the matter is awaiting enquiry at the hands of a joint Commission. The forest is traversed along the south-east by the Local Fund road from Gundulpet to Gúdalúr and where this road enters the forest, another is projected across the forest in the direction of Benne and Sultan's Battery, and again where the Gundulpet road reaches the Moyar, a second forest road proceeds in a north-westerly direction and joins the main road already mentioned towards the middle of the forest 2 miles before arriving at Mudumalai. A cleared right of way exists from the forest road beyond Mudumalai in a south-west direction to a private estate occupied by Mr. Church. The forest has not been demarcated except by the Revenue Survey stones. It is inhabited by a few Chetties who cultivate under patta from the Nilambur Tirumalpad and graze their cattle by permission throughout the reserve. There are also some Jain Kurumbers and Betta Kurumbers in the forest who are mainly dependent on the department for their livelihood.

The whole of this forest is in parts fairly level with numerous small hills some of them steep ; it is permeated by small streams which in places form swamps. The higher grounds are gravelly with little soil, and the growth is deciduous and poor. On the hillocks and in portions where the soil is moister and richer, the forest growth is tall and until recent years included a very rich crop of large teak, blackwood and vengai. Such trees of this class as remain are in the out-of-the-way places south and south-east of the forest, though some few are still to be found in the north-west.

Apart from the timber there is but little produce removed. Gallnuts which are bought from the Kurumbers are sold with similiar produce from the adjoining forest at Benne to a contractor who purchases it by tender, the collections being weighed were about lbs. 15,000.

The point at which Mr. Gamble proposed that our regular operations should commence is the Eastern extremity including the block called Marigudi and he divided off on the map ten blocks aggregating about one-fourth of the forest. These were to be worked over in rotation during the ensuing ten years ; but difficulties supervened and Mr. Popert has lately advised that only the main principles of Mr. Gamble's place should be enforced. It is now ordered that fellings should

be carried on block by block, cutting out all good trees over 6 feet in girth and all unpromising ones over 3 feet. The present condition of the forest is by no means uniform, and apart from the absence of large trees due to the heavy fellings during the past years of the lease and even at an earlier period there is a very considerable portion of the leased area which, from poverty of soil, appears hardly capable of growing large material. If, therefore, we limit our operations to the improvement cuttings in blocks by rotation, the yield in some seasons will be very small while timber will be dying in other portions of the forest. To prevent loss of timber it will be expedient to continue the extraction of mature saleable trees wherever they are to be found. In doing so we shall not in any way interfere with the sanctioned plan devised by Mr. Gamble and endorsed with modifications, by Mr. Popert while we shall secure a yearly return in revenue for some years which will be a set off to the yearly rent and go towards covering any deficit caused by the improvement fellings and the rigid protection which the young re-growth will demand.

In the event of delay in disposing of the boundary dispute with Mysore it will be advisable to treat the area under discussion as a separate block.

To the north-west of the Mudumalai forest settlement there is a teak plantation covering an area of 27 acres originally planted by General Morgan and it is now fully stocked with poles from 1 foot to 2 feet in girth, but the trees are slow growing and give little promise of return for the expensive cultivation they have been afforded. The plantation has been fire-protected not always with success. It has also been pruned, but the operation has had no good result. There is a forest station at Mudumalai consisting of rest-houses for the District Forest-officer and Range officer and Guards with the necessary out-houses around the main building ; the compound is planted up with mahogany, Grevillea and teak. The range quarters need improvement.

At Tippacadu is a Local Fund rest-house in the forest and a station for the six elephants employed on timber works in this range.

The establishment consists of—

Two Forest guards at Tippacadu.
One Watcher at Thorapalli.
One Forest guard and one watcher at Mudumalai.
One Reserve watcher at Tippacadu.

Benne reserved forest.—This was notified for settlement by Government Order, No. 324, Revenue, dated 14th March 1885. It is situated to the west of Mudumalai on the borders of the district and joined to reserved forests in the Malabar district. The forest contains a series of small enclosures, and it is bounded on the south by the high road leading from Sultan's Battery to Gúdalúr. It was originally demarcated with cairns and cleared lines, but the boundary has become obliterated. There is one settlement of Kurumbers within it cultivating at the will of the department.

This may be described as a forest of teak, vengai, ven-teak and blackwood. It is traversed by water-courses which are fringed with a growth of bamboos which extends to a distance away from the streams which flow into the Nulpoya river in the Malabar district.

At present we are extracting about 16,000 cubic feet of mature timber from this forest, chiefly vengai and ven-teak with also some blackwood the supply of which is failing. The minor produce is collected, gallnuts, honey and wax being sold with that from Mudumalai.

The forest is traversed by a road which connects Mudumalai with the Benne forest station and various nullahs are bridged. There is also a rough track which connects Peepigathe on this road with Muthanga in Malabar.

Mr. Popert reported on this forest in Proceedings No. 174 of 4th April 1895 ; he advocates our splitting it up into blocks and compartments and executing improvement fellings in them by rotation as in Mudumalai.

In 1893 an experimental block was selected covering 78 acres and situated on a forest clad slope facing north. Lines were cleared and plants put out from a nursery 30 feet × 15 feet, the species chosen being teak and mahogany ; but most of the plants have died and are this year being replaced. It has been fire-protected, and though the seedlings planted out have not been successful there is a good stock of naturally sown vengai which has taken hold of the ground and is worthy of further protection.

There is also a teak plantation covering 40 acres, planted originally by General Morgan. The trees have not made much progress and give no promise for the future. This is also fire-protected at a cost of Re. 1 per acre per annum. It has also been pruned and thinned, but the operations have had no good result.

The Kurumbers have been induced to plant their cultivated areas with seedlings of valuable species and in this way a commencement has been made of introducing the Burmese system advocated by Mr. Popert. The area was inspected in July 1896, and though the seedlings were small they are healthy. The next year a larger area will be taken up. These Kurumbers will not require to again occupy this special locality planted up, their system being to break new ground only in bamboo jungle.

At Benne the head-quarters of the range is a forest station which contains a serambi built for the District Forest-officer, a large elephant-shed, huts for the establishment and a serambi for the Range officer, but the situation of the latter is low-lying and unhealthy and fresh buildings are necessary.

The establishment consists of—

One Forest guard at Benne.
One Reserve watcher at Benne.
One Plantation watcher at Benne.

The rest of the forests of this range are situated in the South-east Wynaad and consist of smaller areas which are, as stated, now being taken up for settlement. These areas are situated in a cultivated country and include numerous hillocks with deciduous forest including blackwood, wild jack, vengai and bamboos. They are resorted to by local cattle for grazing Hitherto but little revenue has been recovered from them. Occasionally single jack trees have been applied for for ferry-boats. Much attention has not been paid to these forests has yet, pending the completion of settlement and also because of the absorbing nature of the works in Benne and Mudumalai. Two Forest guards are employed on their protection and they are stationed at Cherambadi and Ammankaval.

The offences reported in this range are few; the returns for the past three years showing in all 22 or only 7 each year. Of this total, 8 were concerned with the illicit removal of produce, 12 with grazing (of which 10 in 1893–94) and 2 others of a miscellaneous character. Surrounded as our forests are by those of others, petty produce has no local value.

The operations that have to be conducted in this range at the present time are as follows:—

Timber works in Mudumalai and Benne.
The improvement felling in the selected compartments of Mudumalai and Benne.
The improvement of the Benne station and its water-supply.
The fire-protection of the improvement felling compartments.
Freeing the re-growth in them by a series of clearings.
The upkeep of the roads.
Supply of plants for tuckles.
The demarcation and settlement of the South-east Wynaad blocks.

The Revenue and Expenditure for the past two years of the Mudumalai range were as follows:—

Budget Sub-heads.	Revenue.		Budget Sub-heads.	Expenditure.	
	1894-95.	1895-96.		1894-95.	1895-96.
	Rs.	Rs.		Rs.	Rs.
Departmental working—			Departmental working—		
Timber	15,715	17,406	Timber	2,331	3,301
Grass and other minor produce.	4	..	Grass and other minor produce..	1	167
Removed by purchasers—			Removals by purchasers ..	376	379
Timber	2,596	46	Rent of leased forest	4,500	4,500
Fuel	28	3	Purchase of cattle	2,300	..
Bamboos	86	39	Feed and keep of cattle	2,221	2,631
Grazing and grass	248	264	Plant, tools, &c.	82	31
Other minor produce	725	157	Roads and bridges	520	1,211
Other sources	1,023	905	Buildings	228	361
			Other works	75	298
			Demarcation	33	122
			Surveys	11	..
			Sowing and planting	233	284
			Fire-protection	485	963
			Other works	310	339
			Other charges	875	649
			Total ..	14,581	15,236
			Salaries	2,081	1,936
			Travelling allowance	467	800
			Contingencies	49	167
			Total ..	2,597	2,903
Total ..	20,425	18,820	Grand Total ..	17,178	18,139

There has been only a slight profit of late years and it is probable that this will not be maintained when our selection fellings come to an end and improvement fellings and rigid fire-protection are in full swing.

OOTACAMUND RANGE.

This range comprises the Ootacamund settlement, the Kundah division, and the Todanad excluding the village of Masnigudi. It is bounded on the north by the Sigur range, on the west by the Malabar district and the Ouchterlony valley, on the south by the districts of Malabar and Coimbatore and by the Coonoor range, and on the east by the Sigur and Coonoor ranges.

The areas under conservation are as follows:—

In the Ootacamund Settlement.

Block.	Area in acres.	Number and date of Government Order, Revenue Department, sanctioning settlement.	Number and date of Government Order, Revenue Department, reserving forest.	Remarks.
Arambi	430	No. 589-A, dated 12th May 1883.	No. 1407, dated 18th December 1884.	Plantation.
Therma tope	64	No. 42, dated 11th January 1884.	No. 322, dated 14th March 1885.	Do.
Marliamund	75			Shola.
Brook lands	177	No. 589-A, dated 12th May 1883.		Plantation.
Doddabetta I	328	No. 42, dated 11th January 1884.	No. 478, dated 28th April 1885.	For final demarcation.
Do. II	462		No. 694, dated 11th August 1886.	
Elkku	77		No. 478, dated 28th April 1885.	
Kotagiri trace I	20			
Do. II	32			
Doddahallu	43	No. 83, dated 20th January 1885.	No. 1075, dated 21st September 1885.	
Mainalai	115			
Nergodumund	55			
Fairlawns I	88			
Do. II	17			
Madana	31			
Craigmore	299	No. 42, dated 11th January 1884.	No. 478, dated 28th April 1885.	
Wood cock I	5	No. 83, dated 20th January 1885.	No. 1075, dated 21st September 1885.	
Do. II	11			
Do. III	8			
Lovedale, east	201	No. 42, dated 11th January 1884.	No. 478, dated 28th April 1885.	
Do. west				
Bilikal road	25	No. 966, dated 8th November 1886.	No. 476, dated 29th May 1891.	
Cairn hill	405	No. 589-A, dated 12th May 1883.	No. 1321, dated 1st December 1884.	For final demarcation.
Marliamund	17			
Pathri shola	34			
Munjmikorai	17	No. 42, dated 11th January 1884.	No. 322, dated 14th March 1885.	Do.
Snowdon	1,053		No. 478, dated 28th April 1885.	Do.
Fern Hill shola	10	No. 966, dated 8th November 1886.	No. 476, dated 29th May 1891.	Do.
Baikie and a portion in Nanganad.	176	No. 83, dated 20th January 1885.	No. 1075, dated 21st September 1885.	Do.

It is proposed that the reserved forests shall include an addition to Craigmore, some portions of the Wenlock Downs within the settlement and two further additions to Doddabetta, one of which covering 74 acres has been already declared reserved land.

A large proportion of the Snowdon, Craigmore, Brooklands and Lovedale blocks are purely grass land. The rest of the reserves are sholas, except where the natural growth has been replaced by planted exotics. The regular treatment of these sholas was arranged for by Mr. Gamble, Conservator of Forests, who desired to execute thinnings and creeper-cuttings, but the proposal gave rise to discussion which terminated by orders being given to carry out creeper-cuttings only. This was given general effect to and in all the blocks except Fairlawn and Lovedale.

The shola growth is fairly identical throughout, and is fully described in Mr. Gamble's inspection note published in Board's Proceedings, Forest No. 447, dated 5th August 1887, which also enumerates the more important species represented.

There is no timber extracted from these forests and beyond the receipts from plantation fuel, the only revenue recovered is from grazing which is permitted on payment in all the blocks except the planted portions and the western side of Snowdon which is kept to protect the water supply. Grass is also removed on permit at the rate of ¼ anna per head-load and firewood from the demarcated lines is also removed in the same manner at the rate of one anna per head-load. The works in progress in this portion of the range are the completion of the demarcation, the cuttings in plantations and the manufacture of a portion of the yield into charcoal as well as the general distribution of the produce.

The Todanad division includes the Ootacamund settlement, the Sigur range and adjoins the Kundahs, (Kundanad) and Coonoor ranges.

The areas under conservation are as follows :—

Block.	Area in acres.	Number and date of Government Order, Revenue Department, sanctioning settlement.	Number and date of Government Order, Revenue Department, reserving forest.	Remarks.
Kururmund	1,552	No. 226, dated 20th February 1885	No. 1407, dated 18th December 1884.	
Kadcoopa	1,622		No. 188, dated 13th March 1886.	
Nunjanad	915	No. 589-A, dated 12th May 1883.	No. 426, dated 15th May 1893.	For final demarcation.
Red Hills	48	No. 208, dated 19th March 1890.	No. 53, dated 15th January 1892.	
Porthimund	6,983	No. 55, dated 21st January 1893.	No. 350, dated 19th May 1894.	
Sandynalla	818	No. 226, dated 20th February 1885.	No. 188, dated 13th March 1886.	Do.
Naduvattam I	3,411			
Do. II	67			
Do. III	30	....	No. 693, dated 16th July 1887.	
Ouchterlony	973			
Bellevue I	30	No. 226, dated 20th February 1885.	No. 188, dated 13th March 1886.	
Do. II	60			
Ebanad	571		No. 697, dated 11th August 1886.	Do.
Do. extension	222	No. 76, dated 29th January 1894.	No. 630, dated 30th August 1894.	
Bikkapathi	1,945	No. 952, dated 4th November 1893.	No. 518, dated 18th July 1894.	
Chinnakunnur	14	No. 949, dated 3rd November 1893.	No. 457, dated 29th June 1894.	
Kengal	14		No. 408, dated 9th June 1894.	
Kully	71	No. 589-A, dated 12th May 1883.	No. 1407, dated 18th December 1884.	Do.
Governor's shola	33			Do.
Ulnad	838			Do.
Kengodu	451	No. 226, dated 20th February 1885.	No. 188, dated 13th March 1886.	Do.
Yemmaikal	464			Do.
Mukurti	1,324			Do.
Pichelbettu	1,668			Do.
Karedmund	276	No. 208, dated 19th March 1890.	No. 145, dated 13th February 1892.	Do.
Pykara	844	No. 589-A, dated 12th May 1883.	No. 1407, dated 18th December 1884.	Do.
Muthanad	420	No. 589-A, dated 12th May 1883.	No. 322, dated 14th March 1885.	Do.
Jakuntha	373		No. 318, dated 5th May 1886.	Do.
Honnathalai	320		No. 188, dated 13th March 1886.	Do.
Terrace No. I	21	No. 226, dated 20th February 1885.		Do.
Do. No. II	55			Do.
Karpakan	391		No. 188, dated 13th March 1886.	Do.
Vellingiri	643			Do.
Nilgiri peak	5,962			Do.
Carritt shola	268			Do.
Denamalai	229		No. 367, dated 27th May 1890.	Do.

To complete reservation, a possible extension will be made to include the areas mentioned in the margin. All of these have been preliminarily demarcated with flags on pegs except the Downs which are now being taken in hand.

Paghalamund.	Therkadumund.
Hathikal.	Doddahulla.
Kalhutty road.	Okkashola.
Sandynalla extension.	Karakanmund.
Muditthanamund.	Wenlock Downs.
Devalahulla.	

The working circle hitherto known as Governor's shola includes various plantations of Eucalyptus and Acacia known as Cully, Chowghat Cully and Governor's shola No. II. and the Ulnad reserve comprising others known as Governor's shola No. I, Huppatti, Andi, Sheffield, Krurmund and Anakal. The Muthanad reserve also includes a similar plantation.

The constitution of the remainder is shola and grass land in the proportion of about two acres of grass to one of forest. Fellings are not permitted, but permits are issued for dry Strobilanthes at ¼ anna or ½ anna according to locality. Grazing is paid for and allowed throughout. Fodder grass is removed on head-loads at ¼ anna and ½ anna is charged per head-load of thatching grass. Minor produce is collected including a small quantity of gallnuts.

The works in progress in this portion of the range are the plantation fellings, the distribution of produce and demarcation.

The Kundahs.—This portion of the range adjoins Todanad, Merkanad and the Malabar district and includes the following areas of forest land under conservation :—

Block.	Area in acres.	Number and date of Government Order, Revenue Department, sanctioning settlement.	Number and date of Government Order, Revenue Department, reserving forest.	Remarks.
Kundah	40,540	No 528, dated 5th May 1885.	No. 978, dated 12th November 1886.	
Do. (additions)	2,126	No. 435, dated 27th April 1892.	No. 328, dated 9th May 1894.	For final demarcation.
Begulihalla	46	No. 208, dated 19th March 1890.	No. 53, dated 15th January 1892.	
Hiriashige with addition ..	3,026	No. 528, dated 5th May 1885, No. 447, dated 4th May 1892 and No. 495, dated 8th June 1893.	No. 978, dated 12th November 1886 and No. 355, dated 21st May 1894.	
Yeddakadoo	116	No. 208, dated 19th March 1890.	No. 53, dated 15th January 1892.	Do.
Thai shola	1,551	No. 528, dated 5th May 1885.	No. 978, dated 12th November 1886.	Do.
Mickaroobetta	1,094			

It is also proposed to reserve three other areas known as Bellarumbuhalla, Mullimalai and Keraipadu, and their preliminary demarcation will now be taken in hand.

The main area—the Kundahs—covers an uninhabited tract of grassy hills in the south-west of the Nilgiri plateau. Many of the hills are treeless, others towards Nunjanad have sholas covering their more sheltered portions, while in the interior of the tract is a sparse growth of isolated Rhododendrons. The whole forms an immense grazing ground resorted to on payment by herds of Badaga cattle from the adjoining nads. Hitherto, our work has been confined to the shola growth in the neighbourhood of Avalanche, and as a result of our efforts to protect it from fire and cattle, it has shown a decided tendency to improve and spread.

Apart from the grazing, there is but little revenue recovered from this part of the range. Some few jungle trees are sold for building purposes and dry strobilanthes and thatching grass are removed on permit. The only works in progress are demarcation and protection.

The grouping of the Ootacamund range reserves into working circles is proposed as follows :—

The plantations in and around the settlement have been temporarily grouped into three working circles.

(i) The larger areas known as Aramby, Cairn Hill, Brooklands, Muthanad and Fern Hill plantations have been attached to Elk Hill, Lovedale (East and West), Manjakadu, Fairlawns, Bathri shola and Nergodumund, which are sholas situated in their vicinity and therefore protected by the same subordinate establishment. This would be named the Cairn Hill working circle.

(ii) The plantations known as Therma tope, Snowdon, and Marliamund, being situated apart from others and likely to supply a different market, are grouped along with Marliamund, Bilikal and the rest of the Snowdon reserves into a working circle provisionally known as the "Snowdon circle."

(iii) The plantations to the south-west of the settlement known as Baikie, Cully, Chowghat Cully, Governor's shola, Sheffield, Andy, Uppatti, Anakal and Madanad have been grouped with reserved blocks known as Pichalbettu, Ulnad, Krurmund, Mukurti, Kadcoopa, Red Hills, Nanjanad and Porthimund into a working circle known as "Governor's shola circle."

The proposed Pykara working circle will comprise the area proposed for notification as the Downs reserve excluding Brook lands and the Governor's shola blocks. This will include the reserves known as Pykara, Kengodu, Sandynalla, Yemmaikal, Keradmund, and the separate blocks known as Karpakan and Vellingiri. The Muthanad plantation is in the proposed Downs reserve, so also is the Chemanguli plantations. The latter will undoubtedly remain in the circle as it will be worked independently of the other planted blocks, but the definite placing of Muthanad in the Pykara or the Cairn hill working circle will be determined only when the working plan of the plantations is finally sanctioned.

The Naduvattam working circle comprises all the reserves along the west of the plateau to the west of the Pykara river from Mukurti to the Moyar. It will include the marginally-noted reserves.

Carritt shola.	Naduvattam (enclosing Government Cinchona plantation).
Nilgiri Peak.	Naduvattam sholas I and II.
Ouchterlony.	Devamalai.
Terrace I and II.	
Bellevue I and II (under exchange by addition to Carritt shola).	

The Doddabetta working circle comprises the blocks to the east of the Coonoor road, viz., Craigmore, Doddabetta and its various additions, Woodcock I, II and III, Doddahulla I and II, Mainhalli, Honudhalli, Jakunthu and Kotagiri traces I and II.

The Ebanad working circle will comprise the blocks known as Ebanad with its addition, Kunur, Kengal and Bikkapathimund.

The Kundahs working circle comprises the reserved areas situated to the west of Merkunad, and includes the blocks known as the Kundahs and additions Taishola, Mikara Bettu, Hiriashige and additions, Bigulihalla and Yeddakadu.

The Cairn Hill working circle is composed of bluegum plantations and sholas, some grass land being included in the latter. The history of the plantations is elsewhere recorded, and they have been worked hitherto under a plan known as Mr. Gamble's dating from 1884. In 1895 Mr. Tireman, Assistant Conservator of Forests, was employed on preparing a more comprehensive plan for their treatment and this is now under consideration. They are included with the exception of Muthanad, Brooklands, Fairlawns I and II within the limits of the Ootacamund Municipality, and are therefore assessed to rates.

Apart from the working of these fuel plantations and their protection from fire, the operations connected with the conservancy of the reserved blocks in this circle are restricted to the protection of their boundaries which are all defined by cairns, trenches and cleared lines, and the prevention of felling and grazing other than on permit in all but the planted blocks The revenue from this latter source is considerable, but it includes the fees recovered from grazing Ootacamund herds which go the Wynaad portion of the district. The permits for felling are issued in Ootacamund and allow of the removal of drywood and harmful undergrowth, such as strobilanthes, and from this source a revenue of about Rs. 40 per annum is recovered.

The annual expenditure other than cost of fellings and depôt charges likely to continue is that on the upkeep of boundaries. Fire-protection of the plantations is estimated to cost Rs. 200 annually. The establishment employed at present is one forest guard living in a Government hut at Cairn Hill, and one in a similar hut at Aramby. One watcher is stationed at Lovedale, and it is considered that an additional watcher is needed for the protection of Aramby.

The Snowdon working circle is composed of blue gum and *Acacia* plantations, large areas of sholas and grass land being included. Mr Tireman has prepared the working plan for the treatment of these plantations which will probably be worked for the supply of firewood and charcoal to Government house and offices. The plantations chiefly lie within the Ootacamund Municipality and therefore come under assessment. Work in this circle includes the upkeep of the boundaries which are all defined by cairns and cleared lines and their protection from fire as well as from illicit felling and grazing which is allowed on permit in all except the plantations and a part of Snowdon reserve which has been closed for maintaining the supply channel of the Ootacamund town. A small revenue is also derived from the sale of fodder grass.

The upkeep of boundaries is likely to cause a small annual expense, and the fire-protection of Therma tope and Marliamund will probably cost Rs. 50 per annum. The establishment employed at present is one guard living in a forest hut at Snowdon and it is considered that an additional watcher is needed.

The Governor's shola working circle is composed of blue gum and acacia plantations and very extensive areas of sholas and grass land. These plantations have been worked under Mr. Gamble's plan solely for charcoal manufacturing. Mr. Tireman has prepared a fresh working plan in 1895 for the treatment of these plantations. Apart from the working of the fuel plantation for charcoal and their usual protection from fire, the operations connected with the conservancy of the reserved blocks in this circle will include the erection of stone cairns trenches and cleared lines where necessary along the district boundary, and the prevention of felling and illicit grazing. The revenue from the blocks in this circle in 1895 was Rs. 7,086 recovered as follows:—

	Rs.
Revenue from charcoal	5,727
„ from other sources including firewood	1,359
Total ...	7,086

The annual expenditure anticipated is for the upkeep of boundaries and the fire-protection of the planted areas and sholas, the grass land surrounding them being burnt every year. The establishment employed at present is one guard living in a Government hut at Governor's shola, but two additional watchers are needed.

The Doddabetta working circle comprises indigenous sholas and grass land. No operations are being carried on in this circle. The Doddabetta reserve includes the Cinchona plantations, as mentioned in the notification under section 16. The revenue realized on fodder, dry fuel, grazing, &c., amounted in the past year to Rs. 105 against an expenditure of Rs. 309. A revenue of Rs. 150 may be realized on the same heads during the current year against an expenditure of Rs. 250. The present establishment consists of only one forest guard living in a forest hut and no further expenditure is at present justifiable.

The Kundah working circle is composed of large areas of grass land and some sholas much exposed to wind. Permanent demarcation is complete for most of the Kundahs, Heriashige and Yedakadoo but not along the district boundary. It is probable that the preliminary demarcation of the proposed extensions will be completed this year. The revenue is mostly recovered

from cattle resorting for grazing to this portion of the country from Badaga villages during the dry season. In the past year a revenue of Rs. 140 was recovered against an expenditure amounting to Rs. 559 as follows:—

	Rs.
Demarcation, &c.	415
Pay of guard	144
Total ...	559

The establishment is one forest guard living in a forest hut at Bikkatti, but unaided he cannot protect the vast area of the circle.

The Pykara working circle is composed mainly of sholas and grass lands. The twenty-seven acres of blue gum known as the Chemanguli plantation lie within the Pykara reserve, but it is exposed to the full force of the wind and every year windfalls occur and it is probable that it will be abandoned as a plantation later on.

The only revenue in this circle is recovered from sale of dry firewood, fodder, and thatching grass and grazing fees in all amounting to Rs. 102 against an expenditure of Rs. 153. The plantation at Chemanguli is protected by fire lines regularly cut and burnt every year. Elsewhere only general protection is afforded to the sholas by burning grass around them. The establishment employed is one forest guard living in a forest hut.

The Ebanad working circle is composed of sholas and grass land. Our operations are restricted to demarcation work and this is nearly completed. The revenue recovered during the current year is Rs. 99 against an expenditure of Rs. 324. The main source of revenue is grazing. There are some Japanese bamboos thriving in Kunnur.

The establishment consists of two forest guards living at Ebanad and Chinnakunnur in forest huts.

The Naduvattam working circle is composed of indigenous sholas and grass land. Demarcation is in progress; there is no other operation under execution just at present. Bellevue I and II of this circle are under disafforestment by exchange for cinchona land to be added to Carritt shola. All the sholas in this circle are protected from fire by burning the grass land around them with an additional fire patrol during the season for general conservancy. Permits are issued for dry firewood, thatching and fodder grass and grazing fees which give revenue of Rs. 118 against an expenditure of Rs. 454. The present establishment is one forest guard living in the forest house at Naduvattam, but an additional watcher is required.

The Revenue and expenditure for the past two years of the Ootacamund range were as follows:—

Budget Sub-heads.	Revenue. 1894-95.	Revenue. 1895-96.	Budget Sub-heads.	Expenditure. 1894-95.	Expenditure. 1895-96.
	Rs.	Rs.		Rs.	Rs.
Departmental working—			Departmental working—		
Timber	..	..	Timber	3	..
Firewood	11,041	11,664	Firewood	5,161	6,718
Other minor produce	58	115	Other minor produce	42	49
Removed by purchasers—			Removals by purchasers	61	61
Timber	174	226	Rent of leased forest	..	..
Fuel	143	159	Purchase of cattle	..	..
Bamboos	29	31	Feed and keep of cattle	..	..
Grazing and grass	4,576	4,024	Plant, tools, &c.	28	22
Other minor produce	75	146	Roads and bridges	422	761
Other sources	208	362	Buildings	309	329
			Other works	2	9
			Demarcation	260	1,286
			Working plan	5	456
			Sowing and planting	936	1,295
			Fire-protection	284	560
			Other works	248	169
			Other charges	95	2
			Total ..	7,856	11,717
			Salaries	3,015	3,423
			Travelling allowance	553	731
			Contingencies	19	46
			Total ..	3,587	4,200
Total ..	16,304	16,727	Grand Total ..	11,443	15,917

COONOOR RANGE.

This range is bounded by the Coimbatore district at the base of the hills, and on the plateau by the Ebanad portions of Todanad, the Ootacamund settlement, and the Kundahs. The range thus includes the whole of the southern and south-eastern slopes of the Nilgiris to the plains on which the forest growth is deciduous below and shola in the upper parts. The portions of the plateau comprised within its boundaries consist numerous sholas and as well the plantations in and around Coonoor and Wellington. It has for many years been divided into three portions known as Coonoor, Melur and Kotagiri, and the forests on the last two have been supervised by Foresters living at Karteri and Kotagiri under the general superintendence of the Range officer living at Coonoor, an additional Forester being posted under his orders at Kullar at the foot of the Coonoor ghât. For purposes of description it will be simpler to refer to the three portions of the range separately, since hitherto they have been kept distinct from each other. The Coonoor portion includes the forests north of the Coonoor river along the ghât road, the Eucalyptus and wattle plantation in and around the station and Military depôt with some minor sholas as follows.

The Coonoor ghât reserves to the north of the Coonoor river are as follows:—

	Acs.		Acs.
1. Aduthore	790	5. Benhope (ii)	32
2. Kullar	919	6. Hill Grove	147
3. Burlyar	179	7. Lambsrock shola, west.	66
4. Benhope (i)	41	8. Do. east.	464

On the plateau.

	Acs.		Acs.
Tiger Hill (partly on slopes), Brookland shola	328	Little Rallia	29
Coonoor Peak	259	Newman	70
Bandy shola	94	Rallia shola	30
Bleak House	52	Bettumund, south	137
Spring Field	34	Honnathalai, south ...	214
Sim's Park, No. I	48	Theppakuchi	115
Do. No. II		Billithettu	35
Black Bridge	390	Hallakarai, partly on slopes	172
River reserve	53	Kodamalai	15
Town shola reserve	11	Guernsey	14
Ghât Reserve	247	Dolphin	65
Rallia and addition	355		

The blocks enumerated have all been reserved under the Act. Their boundaries follow the Revenue Survey limits of village maps. All are demarcated with cairns and cleared lines, but in the case of Lambsrock, Hill Grove, Tiger Hill, Burlyar, and Kullar there is difficulty in finding the original Revenue Survey stones though there is no dispute as to their boundaries.

There are no blocks now under settlement, but it is in contemplation to increase our reserved area by the addition of various "village forests" and other areas recently selected by the District Forest-officer. To these as yet no names have been given, nor are their areas defined. They are about 100 in number, and of these about 75 are isolated areas, while the remaining 25 represent extensions to existing settled blocks. If, however, the suggestions are reconsidered by the light of the remarks in the inspection note and reservation is not persevered with in the case of comparatively small areas with only unpromising dry scrub or with in and out boundaries and adjoining extending Badaga or other villages in such a way as to hamper the free movements of the people, the number of selections will be much reduced.

This with such modifications as will be made in the course of settlement will complete the reservation of this portion of the range.

The history and constitution of the plateau plantations has been recorded along with a full account of the indigenous shola growth in Mr. Gamble's inspection note—Board's Proceedings, Forest No. 447, dated 5th August 1887. It is not intended therefore to deal with them in this summary of the forest working beyond mentioning that the demand is such an uncertain factor at present as to prevent our working the plantations up to their full capabilities.

The Burlyar working circle was formed in 1887 of the reserved forests known as Aduthore, Kullar and Burlyar and for some few years was worked under a system. The operations included thinnings, cleanings and the plantation of mahogany, but it was not persevered with. There has been no perceptible improvement from these expensive works, for these areas were rigidly fire-protected while the mahogany if it has not done badly, it has not shown vigour in growth even in the most favourable localities.

The revenue from the reserves mentioned as being on the Coonoor ghât, north of the river, is limited to that realized from the removal of bamboos, firewood and jungle wood on permits chiefly from the blocks in the Burlyar working circle. This amounts to about Rs. 2,000 yearly mostly from bamboos for Mettúpálaiyam and adjoining villages, though firewood removed on head-loads brings in about Rs. 230 yearly. There is no record of minor forest produce removed from this portion of the range except that it is purchased for the sum of Rs. 430 annually. The chief products are gallnuts and syakai from the lower slopes, honey and wax from all reserves.

The result of a departmental collection was as follows:—

	Rs.	A.	P.
Cost	640	3	6
Return	880	3	8

Fire-protection has been limited to the Burlyar working circle, the plantations and the ghât reserve.

The works to be carried out in the Coonoor division are as follows:—

(i) Reclearing and replacing cairns.
(ii) The demarcation, preliminary, of areas under selection.
(iii) Reconsideration of works in Burlyar.
(iv) A building to be occupied by the Forester must be provided, and it is considered, on the whole, advisable to improve the Kullar rest-house now broken down in preference to a new building at Benhope higher up.
(v) A slide may also be requisite for the working of the Coonoor Peak plantation with the object of reducing the expense of transport of the produce. The re-arrangement of our working of the plantations in and around Wellington and Coonoor may necessitate various minor operations of the same nature.

Melur Sub-Range.—The Melur portion of the range includes the Merkunad, and is situated to the south and south-west of Coonoor settlement. The area under conservancy includes the following blocks:—

On the outer slopes.

	Acs.		Acs.
Hullikull	6,411	Pakasuramalai	625
Pillur slopes	2,332	Melur slopes	4,399
Do. addition ...	896		

On the plateau.

Ithalar in Todanad (attached to the Coonoor Range) ...	241	Sutton shola	53
Puduhatti	27	Sutton shola addition ...	38
Sillhulla	192	Commandu	993
Devashola, North	215	Do. addition (enclosed)	32
Do. South		Thaimalai shola	43
Balakola	231	Tudor shola	24
Thalakad	350	Pembroke	122
Kottibenu	35	Osahutti	152
Melur, West	238	Kollakombay	830
Vagunthabettu	79	Pillur shola	39
Mary land	34	Kulear	226
Adigarhutti		Koderu	21

All are finally demarcated but with temporary pillars on cleared lines. There are no disputes except as to an enclosed tank in Commandu reserve, and there is a difficulty in finding the Revenue Survey stones around the Mélúr slopes where they adjoin coffee estates. Beyond this only reclearing and replacing turf with stone in the cairns remain for execution.

In Merkanad, there are 31 separate areas formerly classed as village forests, which are now before Government for final notification as reserved forests, having been recently settled; also an area, Nirburra, 200 acres in extent, notified for settlement; there are also numerous village grazing grounds reserved for that purpose at the time of the Land Revenue Settlement, but with them the department is not at present concerned. Pakasuramalai and the northern slopes of Hullikul are evergreen forest as also the upper portions of the Pillúr and Mélúr slopes; the lower portions of all three contain deciduous growth, grass or bamboo. The remaining areas on the higher ground for the most part are either shola or grass land. On the lower levels, there is deciduous forest, notably in Sutton shola and Commandu. In Devashola is a plantation of bluegum over about 4 acres, 15 years old, never yet cut, there being no market for the produce. There is a small demand for building timber at certain seasons which is met by issue of special permits for selected trees.

The main revenue derived is from firewood and grass for thatching removed on head-load permit.

Under minor produce, the following articles are collected either departmentally or on contract, viz., honey, wax, gallnuts, syakai, deer horns, preference being given to the contract system when possible.

Grazing is permitted on annual permits which are taken by Badaga ryots and some coffee planters and a revenue of Rs. 400 is derived from this source.

The establishment consists of the Forester at Karteri and guards who live in Government huts at Hullikul, Kollamkombai and at Munjakombai on the Devashola-Mélúr road.

Fire-protection is applied to Devashola north, lines being cut yearly, and one fire patrol employed in the dry season.

Forest offences in this portion deal chiefly with illicit removal of firewood and illicit grazing.

The works in hand in connection with this sub-division of the range are as follows:—

(i) Completion of demarcation of reserved forests.
(ii) The demarcation of blocks to be or now under settlement.
(iii) Enquiry into demand for produce on the lower slopes of Pillúr, Mélúr and Hullikul.

Kotagiri.—The Kotagiri portion is situated to the west of Coonoor, and contains the Parangi-nad with the exception of five villages—(1) Coonoor, (2) Yeddapalli, (3) Burlyar, (4) Vubuthalai, (5) Jakkathala—which are included in the Coonoor portion.

The areas under conservancy are, as follows:—

On the outer slopes.

	Acs.		Acs.
Kullar reserve	308	Suttapollium	54
Jakkanare slopes	6,419	Yerkaduhulla	20
Konakarai	1,864	Nadukadhulla	908
Vagapanai	2,648	St. Catherine's Falls... ...	124
Constantia	35		

All these are sholas though in the case of Jakkanare and Vagapanai deciduous forests is included, and Nadukadhulla and St. Catherine's Falls contain grass land.

On the plateau.

	Acs.		Acs.
Denad partly on slopes ...	2,073	Kilhutti	17
Naduhutti	509	Hadumund	48
Longwood	319	Uppatti	53
Do. addition	31	Doddakorai	62
Kerbetta	12	Ulvanadmund	57
Kunnavarai	100	Sinhuttu shola	51
Do. addition ...	97	Madanad	723
Kunnavatti	16	Kodanad valley	294
Bettu Nos. 1 and 2	29	Nedugula	89
Gudakulhulla	299	Kessalada	...
Nott shola	8	Shamrock	43
Gudakull	600	Bikkhutti	19
Deepdale	361	Ittakul, (i) } Do. (ii) }	21
Clyffe	33		
Sundhutti	124	Mavada	211
Kunshola	159	Kuttada, (i) and (ii) ...	29
Kirkinare, (i)	9	Dodabetta	105
Do. (ii)	15		

Of these Naduhutti and Sundhutti, Kirkinare are purely grass lands, while the majority of the others also contain a proportion of similar land.

All are reserved forests and have been demarcated with cairns and cleared lines. All through the selections boundaries have been chosen along the surveyed limits wherever possible, and with few exceptions the cairns replace survey stones: the village maps, therefore, show the reserves with sufficient accuracy.

In the case of Madanad reserve, Ulvanadmund and Kullar, there are disputed encroachments.

Additional selection has proceeded in the way of transferring to reserves village forests, and other small areas found suitable.

No departmental working has been commenced. The principal demand is for bamboos on the Jakkanare slopes. They are removed on permits issued at Kullar, Jakkanare and Sirumugai. The revenue from this source is about Rs. 1,600 in a year; fern, firewood, creepers, &c., bring in about Rs. 50; timber gives Rs. 300 from reserves on the plateau; and grazing about Rs. 1,000 from the plateau villagers who roam over the plateau and slopes.

From minor produce a revenue of Rs. 270 is recovered at a cost of Rs. 150 from the following items:—

Gallnuts, seakai, deer horns. This year the area is included in a contract for the whole range for Rs. 430.

The reported offences are chiefly connected with the removal of firewood from the plateau forests.

The establishment employed besides the Forester is as follows:—

	Rs.
One guard at Kotagiri	10
Do. at Denad	8
Do. at Kodanad	7

Two tannah watchers at Jakkanare and Kengarai. Longwood has been under protection from fire since 1885 by cleared lines, and one watcher is employed upon it.

In this reserve is a road through the shola, and it is of general use.

There is a house in ruins in Kotagiri, a guard's hut in Longwood, another in Kengarai and one at Kodanad.

The revenue and expenditure for the past two years of the Coonoor range were as follows:—

Budget Sub-heads.	Revenue. 1894-95.	Revenue. 1895-96.	Budget Sub-heads.	Expenditure. 1894-95.	Expenditure. 1895-96.
	Rs.	Rs.		Rs.	Rs.
Departmental working—			Departmental working—		
Timber	434	..	Timber	275	..
Firewood	7,131	10,182	Firewood	7,401	8,975
Other minor produce	9	979	Other minor produce	524	113
Removed by purchasers—			Removals by purchasers	734	839
Timber	601	1,208	Confiscations	..	6
Fuel	997	907	Purchase of cattle	..	..
Bamboos	2,749	2,932	Feed and keep of cattle	..	..
Grazing and grass	2,682	2,239	Plant, tools, &c.	24	11
Other minor produce	301	541	Roads and bridges	388	12
Confiscations	24	3	Buildings	467	382
Other sources	305	268	Other works	14	41
			Demarcation	1,099	966
			Forest Settlement	..	101
			Working plans	..	8
			Sowing and planting	367	240
			Fire-protection	862	759
			Other works	22	112
			Other charges	..	15
			Total ..	12,177	12,580
			Salaries	3,379	3,349
			Travelling allowance	1,173	1,304
			Contingencies	116	124
			Total ..	4,668	4,777
Total ..	15,233	19,259	Grand Total ..	16,845	17,357

The work to be undertaken are as follows:—

(i) Demarcation including the re-clearing of lines and the preliminary marking of new selections. The works to be carried on are purely protective with the exception of demarcation and the working of the Coonoor plantations.

For these reasons, and also seeing that we recover no revenue from the vast majority of the plateau reserves, it is scarcely just to other more important and profitable forests to concentrate our small staff of establishment upon the Coonoor Range and if the demarcation can be provided for by a temporary staff it will suffice to keep a Forester to help the Ranger at Coonoor, and another on the ghâts. This will obviate the re-building of the houses at Karteri and Kotagiri, only temporary visits being paid to the localities and not necessarily to the settlement.

E. D. M. HOOPER,
Ag. Conservator of Forests, Southern Circle.

November 1893.

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APPENDIX II.

Notes regarding the habits and peculiarities of the principal timber trees in the Nilgiri district by the late Rhodes Morgan, Esq., Deputy Conservator of Forests.

The sholas of the plateau are devoid of all timber trees—only one or two species affording indifferent timber, such as *Michelia Nilagirica* and *Tern stromia gymnanthera*.

On the slopes many valuable timber trees occur, the principal of which are:—

1. *Tectona grandis.*
2. *Dalbergia latifolia.*
3. *Pterocarpus marsupium.*
4. *Acrocarpus fraxinifolius.*
5. *Cedrela toona.*
6. *Briedelia retusa.*
7. *Bischoffia javanica.*
8. *Lagerstromia microcarpa.*
9. *Santalum album.*
10. *Hardwickia binata.*
11. *Sweetenia chloroxylon.*
12. *Nauclea cordifolia.*
13. *Nauclea Cadamba.*
14. *Acacia sundra.*
15. *Anogeissus longifolia.*
16. *Bignonia xylocarpa.*
17. *Vitex altissima.*
18. *Michelia Champaca.*
19. *Grewia tiliæfolia.*
20. *Mesua Coromandeliana.*
21. *Terminalia tomentosa.*
22. *Terminalia Arjuna.*
23. *Terminalia Chebula.*
24. *Soymida febrifuga.*

1. *Tectona grandis.*—The teak tree grows on the slopes of the hills up to 3,500 feet both on the eastern and northern slopes, but it is not found on the western slopes which are clothed with ever green forest. It occurs also in the Nilgiri, Wynaad taluk, in the Mudumalai, Benne and Kombrakolly forests, where it reaches large dimensions. In the arid country of Sigur and the north-eastern slopes, it occurs more sparingly and it is small, crooked and much flamed. The timber, however, is harder and more richly "figured" than the timber grown on the moister tracts above mentioned. The teak tree is gregarious. Large patches of teak are found in some portions of the forest, whereas in others not a single tree is to be seen. The teak prefers rich alluvial bottoms near rivers and streams, and often in such situations, as will contain 300 cubic feet to the tree. Old trees are generally flamed and show heart shake. They also contain much lime, like the rosewood, both in masses and scattered grains disseminated regularly through the wood. The seed of the teak tree is much eaten by rats, squirrels, &c. In the deciduous forests of the Wynaad where the leaf canopy is thick, and the gross high teak will not propagate itself; but when a clearance is made and all the trees cut over clean, numerous coppice shoots come up, and seedlings and grow vigorously. This may be seen in old Kurumber tuckles where light and air is let in by a clean felling. Any teak trees felled coppice freely, and any good seed then lying in the soil germinates and grows freely. In the North Malabar forests near Naikutty two or three teak trees grow in a coffee estate. As it was the intention to abandon the estate, the Kurumbers were ordered to spare all teak plants when digging up the soil and weeding. The consequence was the three trees above mentioned dropped large quantities of good seed into the loosened soil. These seeds grew thickly and as they were then cleared of weeds for three or four years, they grew past danger, and when the estate was abandoned, the ground become covered with a dense growth of straight poles. Some of these poles will, no doubt, in course of years grow into good timber, if judiciously thinned, pruned and protected. This is the only manner in which satisfactory reproduction can be obtained. All worthless trees must be removed, the soil dug up, and made fit for the reception of the seeds which, when light and air let in, will grow freely enough. The growth of the teak in Wynaad is slow and only one-third that of the growth in Nilambur Crow-bar planting of teak is very successful. The young plants have thick carroty roots, which have enormous vitality; very often teak plants put out in the monsoon will appear utterly dead the next dry weather; but as soon as the April showers fall, a coppice shoot will spring up from the fleshy root, and other conditions being favourable, the plant will grow apace. Teak grows best on what is commonly termed black cotton soil. This soil is extremely clayey and tenacious and generally contains very small nodules of lime in it below the surface. The bamboo is extremely prejudicial to the growth of teak and indeed, of every other tree or plant, and when teak is found growing amongst bamboo, the latter has sprung up subsequent to the former having thoroughly established itself. The roots of the bamboo occupy every inch of soil, and will starve and kill any plant that may succeed in growing a few inches high from seed. Teak seeds should be collected in February for sowing. As regards the planting of teak I need say nothing further, as the system is well known and practised on a large scale in Nilambur.

2. *Dalbergia latifolia.*—This magnificent tree grows from the sea-level to 4,500 feet elevation. It may even be found above that elevation, but never grows into a tree, remaining a small scrubby bush, and covering patches of ground on the margins of sholas. It reaches its greatest perfection at an elevation of 3,000 feet where single trees of 8′ to 10′ in diameter may be seen. The rosewood prefers very rich soil and reaches its maximum size on alluvial land on the banks of rivers. The growth of the tree is very slow. It coppices freely when young, and throws up root-suckers freely wherever the roots are cut or injured. It seeds heavily every alternate year and fairly in the intervening years. Once properly established, it has considerable vitality, and will stand being burnt year after year. The wood often contains much lime which occurs disseminated in minute particles throughout the tree or in masses in cavities caused by injuries. This lime very quickly blunts the saws used to cut the wood and sawyers usually therefore demand extra rates for sawing it.

3. *Pterocarpus marsupium.*—The venghay or honne, by both of which names this valuable timber is known in this district, grows well in the Wynaad and on the slopes up to 4,500 feet elevation. It grows freely from seed which being winged is blown, to a very great distance from the parent trees. I have found venghay seeds lying on the Khoondahs which had been blown up 7 or 8 miles from the Wynaad plateau. The venghay loves a rich soil and is generally found in the same situations and growing with teak and rosewood. If cuttings are taken from young trees, they will root readily. The remarks made regarding the propagation of teak apply in a great measure to venghay. The seeds which are produced in abundance annually are very evenly distributed over the forest (unlike teak) and germinate freely if the grass has been burnt. But the young plants are speedily killed out by the coarse grasses which grow with surprising vigour after a burn and soon overpower and destroy the young seedlings. The thinning out of worthless trees, the removal of the rank grass and the digging up of the soil are absolutely essential, if the reproduction of venghay or indeed any other valuable tree is aimed at.

4. *Acrocarpus fraxinifolius.*—This gigantic timber tree, only grows in heavy evergreen forest on the southern and western slopes. It is not found on the eastern slopes where the rainfall is too light to suit it, and is occasionally found on the northern slopes. It is most abundant in the Droog forests in Coonoor. The pink cedar or shingle tree is partial to the banks of streams and moist places. It is a very rapid grower but a shy seeder. Owing to the immense size of the tree, the seeds are very difficult to procure. The young plants spring up readily in the sholas and will bear a good deal of shade without injury, though their growth is retarded. Any access of light occasioned by the fall of surrounding trees, greatly benefits them and causes an increased and rapid growth which speedily carries their heads into light and sunshine and enables them to hold their own. All that is necessary therefore is to assist young saplings by cutting away worthless trees and letting light in.

5. *Cedrela toona.*—The red cedar grows up to 5,000 feet. It is partial to ravines and moist places and is fairly abundant in sholas on the lower slopes. The seed is very small and light and is blown great distances by winds. The young plants grow exceedingly fast. It reaches a very large size in the moist evergreen sholas of the western slopes. It a very vigorous seeder, and a most useful tree and should be extensively propagated. Numerous plants have been raised and planted out in open spaces in the ghât reserves below Coonoor. There is no difficulty in growing it from seed. The red cedar grows luxuriantly in ravines in the Wynaad, but except where grown in dense shade the tree is crooked and does not produce straight timber as it has a tendency to fork and branch low.

6. *Briedelia retusa.*—This tree grows in much the same places as the red cedar. It is called mul venghay and komanji. The seeds are eaten by birds and thus propagated. It is a fairly rapid grower when young and is easily propagated from seeds. It grows well on hill slopes. The timber is in much demand in Wynaad, as it is considered proof against white ants.

7. *Bischoffia javanica.*—This handsome timber tree is partial to ravines and water courses, and is not often found in other situations. It seeds heavily. The seeds being round, and about the size of peas, fall direct on the ground. Very few seedlings come up out of the immense quantity of seed that falls, for most of it is destroyed by rats. It can be readily propagated. The timber, though valuable, is liable to the attacks of the woodborer (*xylocopa*) and is not held in much favour by Natives.

8. *Lagerstræmia microcarpa.*—This fine timber tree grows up to an elevation of 3,500 feet. The timber is held in much estimation as it is light, strong and easily worked. It prefers rich soil and grows to a large sized tree sometimes containing 200 cubic feet of timber. It seeds in great abundance, and young seedlings grow fairly quickly. It is found on the edges of sholas and in deciduous forests. The seeds are light and are fairly evenly distributed. The venteak has a tendency to dry rot, and trees may be seen apparently in full vigour, with numbers of holes all the way down the trunk made by woodpeckers to rest in. This tree would be more abundant were it not for the rank grass that destroys all the young seedlings. The same remarks regarding teak and venghay apply to this as far as reproduction goes.

9. *Santalum album.*—This very valuable wood is only found in the Sigur forest, and on the northern and eastern slopes of the Nilgiris up to an elevation of 4,000 feet. It is partial to ravines, water-courses, and dry sholas and will not grow well as a rule in the open. There are certain trees which it affects and near which it grows with great luxuriance—other trees again are detrimental to it, and near such trees it grows badly. The leaves turn a sickly yellow, and the tree languishes. This is due to the fact that it is a root parasite, and obtains nourishment from the roots of certain trees which serve it as hosts. It bears large quantities of purple berries, which are greedily eaten by birds, and thus carried far and wide and easily propagated. It prefers a reddish or chocolate coloured soil, but will also grow in a black cotton soil, provided the drainage is free. If the drainage is not good, the plant grows sickly and the leaves turn yellow and fall off. The wood is most valuable when grown on rocky soil. In such situations, the essential oil is most largely developed. The sandal tree ought not to be felled, but rooted up bodily. When this is done, numerous rootsuckers come up from the severed roots, and the tree

removed is thus replaced and a larger amount of billet wood obtained. The sandal grows freely in hedge rows, for in such places birds love to sit and there drop the seeds, which favoured by the protection of the hedge grow up into trees. In rich soil the growth of this tree is fairly rapid; but in such situations heart wood is not quickly made, and the proportion of sap wood is much greater—sandal is easily propagated by seed. The plants should then be placed in baskets and the baskets put out in October in favourable sites, care being taken to plant cuttings of suitable plants round it for protection. Cattle, goats and deer are very partial to the leaves, and eat the young plants down greedily. Fire is fatal to the sandal tree which rarely recovers after having been once badly scorched.

10. *Hardwickia binata.*—The acha is a magnificient timber tree, but it is very scarce in this district. A very few trees are found in the north-eastern slopes of the Nilgiris. It grows to a large size, generally on steep slopes of hills to which it gives a park-like character. The trees grow about 100 yards apart as a rule. The seeds are very light, and are carried far and wide by wind. They germinate freely, but are annually destroyed wholesale by forest fires and efficient fire-protection is sufficient to ensure a good growth of seedlings. Cattle eat the leaves greedily, and herdsmen pollard the trees for their cattle and remove the fibre for ropes. The wood is exceedingly hard and dense any is extremely valuable. It will last for ever if well protected. It is dark in colour and handsomely figured, is an excellent building and furniture wood and has doubtless a great future before it. It is a timber to which the Forest Department should pay most special attention and all tracts of forest in which it grows should be most carefully and scientifically treated. It prefers a rocky and stony soil and a steep slope where the rainfall does not exceed 50 inches.

11. *Swietenia chloroxylon.*—The satin wood grows sparsely in the Sigur forests and the eastern slopes of the Nilgiris. It prefers a red soil, and rocky ground with a rainfall of from 20 to 40 inches. The seeds are very light and are blown a long distance by the wind. The reproduction is good, but the tree is of slow growth and any excessive drought kills all the young plants. Protection from fire is all that is needed to ensure reproduction. The mature tree rarely exceeds one foot in diameter in this district. It is much valued for cabinet work and for the naves of cart wheels.

12. *Nauclea cordifolia.*—This tree flourishes best in a rich soil near streams. It is of rapid growth and attains a large size. The wood is yellow, soft and easily worked; is used for house-building and furniture, but unless well seasoned, warps and shrinks badly. It is very liable to the attacks of the *xylocopa*. The seeds are minute and not easily disseminated except when swallowed by birds. Fire-protection is the only measure necessary to ensure its rapid reproduction.

13. *Nauclea cadamba.*—Same remarks apply to this species which only grows near water.

14. *Acacia sundra.*—This very hard-wooded tree is only found in Sigur and the lower portions of the eastern slopes of the Nilgiris. It does not flourish above 2,000 feet elevation. It is a gregarious tree and prefers a red sandy soil which is often stony or rocky as well. It seeds freely and the reproduction is good; but the trees are generally crooked. If the north-east monsoon is favourable, the seeds germinate freely. No special measures are needed to ensure reproduction.

15. *Anogeissus longifolia.*—A good timber tree; but not considered very valuable by the Natives. It is also known as *Conocarpus longifolia*. It is the commonest tree in the deciduous forests of the Wynaad and the slopes It seeds abundantly, and the reproduction even under very adverse circumstances is very good. It grows indifferently on all soil and situations and is extremely hard; young plants spring up in abundance everywhere and no measures whatever are necessary to ensure reproduction.

16. *Bignonia xylocarpa.*—A small timber tree with long curved pods covered with tubercles, the seeds are small and winged and therefore blown widely everywhere by the wind. It grows in Wynaad and the slopes indifferently up to 4,000 feet elevation. The flowers are white and are borne in profusion in the hot weather. It reproduces itself pretty freely, and no special measures are necessary to ensure reproduction.

17. *Vitex altissima.*—This timber tree is common in the Wynaad and grows freely; but is as a rule much branched and crooked. It seeds abundantly and the reproduction is fair. No special measures are necessary for its reproduction.

18. *Michelia champaca.*—This handsome tree is scarce in the Wynaad. It is generally planted near temples, and is considered sacred. It occasionally grows to an extraordinary size. The flowers are yellow and appear in the hot weather. They are very fragrant and valued by the Natives. This tree usually grows in sholas, or near water. The timber is brown in colour and valuable for house building and furniture. The seeds are borne in clusters and are of a brilliant scarlet in colour. Birds eat the seeds and it is thus disseminated. It is easily grown from seed and of quick growth. The best way to propagate it would be to plant out seedlings in baskets in favourable places.

19. *Grewia tiliæfolia.*—This timber tree is commonly distributed in the forests everywhere up to 4,500 feet elevation. It grows readily from seed. The tree bears an acid fruit of a red colour, of which birds are very fond. They eat quantities of it and it is thus disseminated widely. No special measures are necessary for its reproduction. The wood is of a dark reddish chocolate in colour—very dense and elastic and valuable for house building, &c.

20. *Mesua coromandeliana.*—This very hard timber is only found in evergreen tropical sholas on the western and southern slopes of the Nilgiris and Wynaad. It is of slow growth and reproduces itself readily and rapidly from seed. The young plants bear shade very well. The wood is a reddish-brown in colour and very hard; but is subject to dry rot if exposed to damp.

21. *Terminalia arjuna.*—This grand timber tree only grows on the banks of rivers and streams and is never found on hill slopes. A few trees are found in Sigur; but it will not flourish where the rainfall exceeds 40 inches. It grows to an immense size. The timber is hard and durable and in much request by the Natives. The seeds are borne in profusion and as they drop on damp soil, or into water, germinate and grow readily if in an open spot with good soil. There is no difficulty in propagating this noble tree.

22. *Terminalia tomentosa.*—The black muthu grows in great abundance in the forests of Benne and Mudumalai. It requires a heavy rainfall and a rich black soil. In such situations it grows to an immense size. It seeds freely, but the majority of the seeds are destroyed by rats, squirrels and monkeys and few remain to germinate. It is, however, a very hardy tree, and reproduces readily, so no special steps are necessary to secure reproduction except fire-protection. The timber is heavy and durable; but is subject to dry rot, if exposed to damp, and is liable to the attacks of white ants.

23. *Terminalia chebula.*—This valuable tree is rarely felled for its timber on account of the great value of its nuts known as myrabolams in trade, and which are largely used for dyeing and tanning. This tree grows up to an elevation of 5,400 feet. It grows scattered amongst other trees and reproduces itself fairly well. The large seeds dibbled in the ground grow well and quickly, and the tree can thus be easily reproduced. It requires protection from fire when young. Older trees are much infested by Loranthus, which diminish their yield of fruit, and require removal. The gallnut flourishes best in a moderately rich soil, with a rainfall of from 40 to 70 inches. These trees are often much damaged by the persons who collect the gallnuts lopping off the branches.

24. *Soymida febrifuga.*—This valuable timber tree is scarce in this district. It is only found in the lower slopes of the Nilgiris. The reproduction from seed is poor and artificial aid is necessary to increase it. It grows indifferently on most soils. It cannot be considered an important tree in this district.

Further Note on Rosewood.

Dalbergia latifolia.—Blackwood or rosewood is found from the sea-level to 4,000 feet in elevation. It is one of the principal timber trees of the deciduous forests being rarely found in evergreen (shola) forests except on the edges of such forests or standing isolated in grass land between sholas. It grows readily from seed and rootsuckers and when felled young coppices freely; rosewood prefers a stiff black clay soil with lime in it. The sap takes up quantities of lime which is deposited in lumps often weighing 20 or 30 lb. in cavities in the trees caused by injuries. Hence it is a difficult wood to saw as in addition to its hardness, the lumps of lime break the teeth of the saws used in cutting it.

The finest rosewood is found in the Wynaad plateau in the teak zone and also along the verge of the Western Ghâts, where grand solitary trees used to grow on the grass hills. In 1884–85 a very active demand sprung up for good-figured logs in the Bombay market, where this wood is much valued in making the famous and unique. Bombay carved rosewood furniture. Prices rose to 9 annas 6 pies per cubic foot, in North Wynaad at which rate I cut and disposed of a large quantity of fine timber. Planters and Native jenmies immediately rushed into the trade and disposed of very large quantities of timber principally from Vayitri and the Pulpully forests. All trees containing over 20 cubic feet of timber were quickly felled and sold. In former years, thousands of magnificient rosewood trees were felled and burnt by planters as valueless when opening land for coffee.

Messrs. Brown and Company of Tellicherry were the first to enter into a regular trade in Indian timber with the London and foreign markets on the continent and I sold them some teak, rosewood and other timber at fair rates, the rosewood I think at 9 annas 6 pies per cubic foot.

In Nilgiri-Wynaad a considerable quantity of rosewood is still available Some of it was felled in the Mudumalai forest, when improvement thinnings were carried out there, and sold at the very low rate of 4 annas per cubic foot in 1886, but this was stopped. At present it is difficult to obtain 6 annas per cubic foot for the finest rosewood in the Benne and Mudumalai forests. There is no demand for it, and access to the coast *viâ* Karkoor is difficult.

(Signed) RHODES MORGAN.

12

Resolution—Forest No. 121, dated 20th March 1897.

Recorded with the following remarks.

2. *Paragraph* 15 *of the Inspection notes.*—The reservation of each block should be left to be decided on its merits; and in the case of blocks notified under section 4, the necessity for reservation should, as suggested by the Collector, be considered during settlement by the Forest Settlement-officer, who should bring to the notice of the Collector or the District Forest-officer any case in which he sees reason to believe that it would be inadvisable to proceed with reservation.

3. *Paragraphs* 30 *and* 37.—Mr. Hooper's attention will be drawn to the remark made in paragraph 1 of Board's Proceedings, No. 174, dated 4th April 1895, to the effect that it must be understood that any measures now decided on with regard to the Mudumalai and Benne forests must be systematically persevered with for a series of years. This remark was concurred in by Government in Government Order, No. 820, dated 12th June 1895.

4. *Paragraph* 33.—The Board notes that the report promised by the Collector on the Baduga plantations will become due by the end of the current (forest) year.

5. *Paragraph* 38.—The proposal to improve the subordinates' quarters at Mudumalai, Benne and Masnigudi is approved.

6. It is noted that the general condition of the District Forest office is satisfactory.

7. The Board desires to thank Mr. Hooper and the District Forest-officer for the carefully drawn-up history of the forests which appears as an appendix to the Inspection report.

(True Copies and Extract.)

(Signed) R. C. C. CARR,
Secretary.

To the Collector of Nilgiris.
,, Conservator of Forests, Southern Circle.
Copy to the Secretary to Government, Revenue Department.

Order—No. 329, Revenue, dated 14th May 1897.

Forest No. 72.

Recorded with an expression of concurrence in the Board's remarks.

(True Extract.)

(Signed) G. STOKES,
Ag. Secretary to Government.

To the Board of Revenue (Land Revenue).

Exd. C. M. Thumbuswamy.

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