

ADMINISTRATION REPORT
OF THE
FOREST DEPARTMENT
OF THE
MADRAS PRESIDENCY
FOR THE
YEAR ENDING 31st MARCH 1931

VOL. II — 1930-31

MADRAS
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ANNUAL ADMINISTRATION REPORT OF THE FOREST DEPARTMENT

FOR THE
YEAR ENDING 31ST MARCH 1931.

FIRST CIRCLE

35900

CHAPTER I.—CONSTITUTION OF STATE FORESTS.

1. ALTERATION IN AREA.

1. (i) *Reserved forests*.—The total area of reserved forests decreased from 4,054 square miles to 3,981 square miles chiefly due to the transfer of the Kanigiri range from Nellore to the Kurool South division of the Second Circle.

(ii) *Reserved lands*.—The total area of reserved lands increased from 15 square miles to 62 square miles due to the notification under section 4 of six blocks of 17.73 square miles in Upper Godavari and of nine blocks of 29.21 square miles in Rampa (Lower Godavari).

2. FOREST SETTLEMENT.

2. Draft notifications under section 16 in respect of Bologonda and Bandapalli blocks in Rampa and of Repaka extension in Upper Godavari were received during the year and are still under correspondence.

3. DEMARCATION.

3. An expenditure of Rs. 5,101 was incurred on the demarcation of blocks proposed for reservation in—

	MILES.
Ganjam (Balliguda Agency)	40
Godavari Upper	3
Godavari Lower (Rampa)	126
	169

In Lower Godavari, the boundaries of the notified blocks in Rampa were cleared and maintained at a cost of Rs. 1,014. In Guntur the erection of stone cairns in the place of mud cairns round Aduvaladivi reserved forest was done at a cost of Rs. 274.

In Nellore about $2\frac{1}{4}$ miles of boundary of the Sathiavedu reserved forest was demarcated with granite pillars at a cost of Rs. 94 thus completing the demarcation of this reserve. A length of $5\frac{1}{2}$ miles of the boundary of Nagalapuram reserved forest was demarcated at a cost of Rs. 111.

The reclearance of boundaries was, as usual, done by the subordinates free of cost or as a part of the scheme for fire-protection.

Fifty-eight miles of frontier boundaries were inspected by the District Forest Officer and the Extra Assistant Conservator in Upper Godavari.

4. FOREST SURVEYS.

(a) By the Madras Survey Party.

4. In Lower Godavari the Madras Survey Party continued to send sketches of the external boundaries of reserved forests name below in Peddapur, Gokavaram and Polavaram ranges. These were duly verified:—

Peddapur	...	...	{ Anantaram. Raghayapatnam. Saranka. Vuligogula. Mallavaram.
Gokavaram	...	...	{ Sudikonda. Molleru. Lakkonda. Thirumalayapalem.
Polavaram	...	...	{ Bedadavole. Marlagudem. Kovvada block II. Kopalli.

A discrepancy in respect of the external boundary of Upputeru block II was investigated by the Assistant Director of Survey, No. I Survey Party, and according to his decision a fresh land complaint is being filed.

(b) By the Survey of India Party.

Ganjam.—The survey on 4-inch scale of Galleri extensions was undertaken towards the close of the year. The work was not completed.

Upper Godavari.—A topographical survey on 1-inch scale was carried out in the Bhadrachalam taluk.

CHAPTER II.—MANAGEMENT OF STATE FORESTS.

1. REGULATION OF MANAGEMENT.

5. *Preparation and control of working plans.*—No new working plans were sanctioned during the year.

Ganjam.—The revised working plan for the Ghumsur forests prepared by the Working Plans branch was completed and is awaiting sanction. The prescriptions of this revised plan were followed during the year.

The Mohiri forests of Berhampur range continued to be worked according to the scheme of 1922.

Vizagapatam.—The prescriptions of the sanctioned working plans were generally adhered to with minor exceptions.

The revision and consolidation of the working plans is being taken up by the District Forest Officer.

Upper Godavari.—The working schemes sanctioned by the Conservator were in force during the year. Details for part I of a working plan for the whole division are being gathered.

Lower Godavari.—The revision and consolidation of the working plans in the division was taken up by the Working Plans branch after the close of the year.

Guntur.—The draft working plan for the upland forests of Palnad, Vinukonda and Sattenapalle ranges called "the Guntur Upland Forests Working Plan" prepared by Mr. P. Venkataramanan was gone through by the Conservator in detail and returned to the District Forest Officer for revision in the light of the Chief Conservator's orders to include the provision for the removal of yepi (*Hardwickia binata*) leaves for fodder and for sheep grazing.

The working plan for the Repalle mangrove forests has not been taken up as it involves the stock-mapping of the actual growth of mada (*Avicennia officinalis*) in the different reserves.

Nellore.—The revised working plan for the forests in Sriharkota range was discussed in detail by Mr. Madan with the District Forest Officer who is redrafting it in the light of the instructions issued to him.

The prescriptions of the working plan sanctioned for the Sathiavedu range were generally followed. The revision of this plan will be taken up by the District Forest Officer after a personal discussion with the Conservator early in September 1931.

2. COMMUNICATIONS AND BUILDINGS.

6. No new work costing over Rs. 5,000 was sanctioned during the year.

7. *Roads and bridges.*—The total expenditure on new works amounted to Rs. 11,274 while that on repairs, to Rs. 9,190.

The important works were—

Ganjam.—Construction of Tarasingi-Gayagonda road.

Vizagapatam.—Construction of 2 miles 9 furlongs of the Veeraghattam-Donubai road project.

Upper Godavari.—About two miles of cart-track in Walsugri and Sitarampuram reserved forests.

Lower Godavari.—Part-construction of Kachalur-Peddanthula road.

8. *Buildings.*—The expenditure on new works amounted to Rs. 7,441 while on repairs, to Rs. 23,339.

The principal works were—

Ganjam.—Part-construction of forester's quarters at Tilasingi.

Upper Godavari.—Completion of the Range Officer's and clerk's quarters at Bhadrachalam.

Lower Godavari.—Improvements to the District Forest Officer's quarters at Cocanada.

Guntur.—Completion of the rest-house at Nizampatam.

9. *Other works.*—The expenditure of Rs. 579 on new works mainly represents the cost of deepening the well in the Narasapatam Range office compound (Vizagapatam) by hand-boring apparatus and of completing the well in the range quarters at Chintur (Upper Godavari).

Maintenance.—All the District Forest Officers except District Forest Officer, Ganjam, whose certificate is awaited, have certified that the roads and buildings have been properly cared for and that they have been kept in repair with the following exceptions:—

Lower Godavari.—Dawson road in Polavaram range; this has since been ordered to be abandoned.

Mulagalampalli rest-house due to delay in the submission of the estimate by the Range Officer.

Nagalapuram rest-house proposed to be demolished.

3. PROTECTION OF FORESTS.

(a) General protection.

10. The total number of offences reported during the year is compared with the number in the previous year in the statement below:—

	1929-30.	1930-31.		
		By Forest officers.	By Revenue officers.	Total.
1. Injury to forests by fire	116	176	4	180
2. Unauthorized felling	2,932	1,883	851	2,734
3. Grazing	735	604	25	629
4. Other offences	312	95	111	206
Total	4,095	2,758	991	3,749

There is a decrease under all heads except under "Injury to forests by fire" which shows an increase. The decrease occurs principally in Ganjam, Lower Godavari and Guntur and is attributed to better protection, the organizing of patrol parties in Lower Godavari to put down firewood stealing and to the permission granted for the removal of yepi (*Hardwickia binata*) leaves in Guntur.

Special patrol parties were organized in Vizagapatam and Lower Godavari divisions and the result was satisfactory. No parties could be organized in Guntur as the staff of a beat could not be spared elsewhere lest the protection of that beat should suffer.

In respect of reserves, out of 734 cases disposed of in court conviction was obtained in 279 cases and 455 cases were treated as acquittals. Of the number treated as acquittals, in 401 cases compounding fees were paid in court. The percentage of successful prosecution was 97.

In respect of unreserves, out of 158 cases disposed of in court conviction was obtained in 98 cases and 60 cases were treated as acquittals. Of the number treated as acquittals, in 37 cases compounding fees were paid in court.

The total amount of compounding fees realized during the year was Rs. 32,184.

The percentage of offences enquired into by the District Forest Officers and Range Officers is given below:—

District.	By District Forest Officer. PER CENT.	By Extra Assistant Conservator. PER CENT.	Rangers. PER CENT.
Ganjam	...	11.4	64
Vizagapatam ...	3	...	15
Upper Godavari ...	2.04	...	43.2
Lower Godavari ...	0.25	...	39
(One case)			
Guntur	2	...	5
Nellore	4	...	3.5

11. *Rewards*.—Rewards amounting to Rs. 145 were granted in Lower Godavari and Guntur to subordinates for special efforts made in detecting offences under difficult circumstances.

(b) *Protection from fire.*

12. Form No. 31 shows the areas attempted to be protected and those actually protected during the calendar year 1930. The number and origin of fires are given in Appendix A. Early burning was undertaken nowhere in the Circle. The area under special protection decreased from 920,135 acres in the previous year to 896,150 acres during the year due to the transfer of the Kanigiri range from Nellore to the South Kurnool division. The area burnt was 183,063 acres, the bulk of which 64,903 acres were in Nugur range of Upper Godavari which is difficult to protect as the reserved forest consists of steep hill sides where once the fire starts it is practically impossible to control it. The percentage of successful protection was 79.6 against 82 in the previous year due to the exceptionally severe hot weather of 1930. The cost of successful protection per square mile was Rs. 8-9-6 against Rs. 8-14-0 in the previous year. The area under general protection was 789,765 acres out of which 48,334 acres or about 6 per cent were burnt.

The Khonds in Ganjam assisted as usual in preventing and extinguishing fires for which they were given rewards in the shape of rice, etc., to the value of Rs. 198 against Rs. 248 in the previous year.

A sum of Rs. 806 was distributed to the Koyas and Reddis in Upper Godavari for the successful protection of forests against Rs. 2,307 in the previous year.

In Lower Godavari, the settlers of the Peddapur range were granted rewards amounting to Rs. 525 for successful protection and a sum of Rs. 146 was withheld as fines for bad protection.

The Koyas and Reddis of the Polavaram Agency failed again this year to earn any reward. Their indifference to the protection of forest still continues and steps will be taken after due warning to close areas badly damaged by fire.

(c) *Protection from cattle.*

13. The area open to grazing of all animals except goats (which were entirely excluded from reserves) was 2,262 square miles (69 per cent of the total area of reserved forests and lands) against 2,193 square miles in the previous year chiefly due to the addition of a large area under reserved lands. The area closed to browsers was 391 square miles or 12 per cent of the total area of reserved forests and lands.

The grazing incidence in the several districts was:—

District.	1929-30.	1930-31.
Ganjam	5.65	6.83
Vizagapatam ...	5.00	6.00
Upper Godavari ...	4.57	4.20
Lower Godavari ...	2.43	2.27
Guntur	3.31	3.65

In Nellore, 91 kanchas out of 126 were sold at varying rates: 25 kanchas were sold on long lease and the remaining 66 on short lease. Thirty-five kanchas were not sold for want of demand. Eighteen of the unsold kanchas fall in Sathiavedu range where the villagers wanted to have the leases without limitation of the number of cattle or period of grazing, in violation of the fundamental principles of the kancha system. Their requests were not granted.

The number of cattle licensed to graze on payment was 319,281 against 344,684 in the previous year. The decrease is principally in Ganjam, Vizagapatam and Guntur and is attributed to cattle mortality and to late setting in of the monsoon.

The number of cattle impounded during the year was 8,294 against 11,240 in the previous year. The decrease is generally attributed to cattle disease which prevented cattle from resorting to the forests.

(d) *Protection against injuries from natural causes.*

14. *Lower Godavari*.—The teak plots suffered from the ravages of defoliators. There was no damage to casuarina seedlings by insects.

Guntur.—The destruction of prickly-pear by means of cochineal insect was tried in Muthayapalem and Kondapalli reserved forests in November 1930 and January 1931. The insect has established itself and the results are satisfactory. It is proposed to introduce the insect in other parts of the division.

Nellore.—The old Loranthus plot to note the season, rate of infection and kind of trees which are affected by this pest, and the plot to note rate of infection of viscum and whether infection affects crop of seeds of nux-vomica continued to be maintained and observations were recorded.

The destruction of prickly-pear by cochineal insect was undertaken in the Sriharikota Island in September 1930. After the cessation of the rains the infection spread extensively between 20th January and 20th February.

CHAPTER III.—SYLVICULTURE.

SECTION 1.—FORMATION AND REGENERATION OF FORESTS.

(i) General progress of areas under regeneration.

15. *Ganjam.*—Natural regeneration of sal in the clear-felled areas and of miscellaneous species in the fuel coupes continued to be satisfactory.

Vizagapatam.—Natural regeneration of sal in Palkonda range, and of important species in Dharakonda and Sanivaram reserved forests of Narasapatam range continued to be good.

Seedlings of *Bambusa arundinacea* are coming up profusely in Narasapatam range. *Dendrocalamus strictus* continued to seed sporadically in Dharakonda and Sanivaram reserves and its regeneration is good. Sporadic flowering of *Dendrocalamus strictus* was also observed in Antikonda and Burna reserved forests of Palkonda range.

Upper Godavari.—Artificial regeneration of teak was generally satisfactory. The seeding of teak and *Pterocarpus marsupium* and other important species was very poor.

Guntur.—Natural regeneration of mada (*Aricennia officinalis*) in the mangrove forests of Repalle range was fair. Natural reproduction of yepi (*Hardwickia binata*) and other species in the reserves of upland ranges was also fair; but, owing to hardness of soil and absence of moisture, the seedlings did not thrive well and few survived the hot weather.

(ii) Establishment of reproduction under working plans or schemes.

(a) Mainly natural.

16. In Ganjam, natural reproduction was considerably helped by such silvicultural operations as tending, thinning, etc. In Vizagapatam coppice reproduction was good in felled coupes and especially in Palkonda range where it ousted the growth of grass, thus reducing the risk of fire. In Upper Godavari, advance regeneration fellings were conducted in five coupes (285 acres) which are due for final fellings five years later with a view to open up the canopy and to give more light to teak and terminalia seedlings and to promote seed-bearing and germination of valuable species. On the east of the Sabari the regeneration fellings have produced appreciable results as the operation has increased the natural regeneration of teak and *Terminalia tomentosa*; while on the west of the Sabari where the rainfall is poorer there were no noticeable improvements. In Peddamidisileru series—the westernmost portion—these fellings had no effect at all. Burning the areas which were subject to regeneration felling and broadcast sowing of teak seeds was started as an experimental measure in two series. Coppice reproduction in felled coupes was good.

Coppice reproduction in the felled coupes was good in Lower Godavari, Guntur and Nellore. Seedling regeneration in Sriharikota range was excellent especially of *Memecylon*, *Maba* and *Atlantia*.

(b) Mainly artificial.

17. *Upper Godavari.*—A brief account of the regeneration operations carried out in this division is given below:—

Modified Taungya Coupe I of Kansulur reserved forest (28 acres).—Casualties were replaced with teak stumps at the time of tending at a cost of Rs. 80.

Modified Taungya Coupe II of Lakkavaram reserved forest (24 acres).—Eighteen acres were ploughed twice and 6 acres once, in May 1930. Twenty-five thousand nine hundred and fifty-three stakes were planted at 6 feet intervals and teak seeds were dibbled in May 1930, ten seeds per stake. Casualties were replaced with 8,350 teak germinating seeds and 12,600 teak stumps in August and September 1930. Enumeration at the end of the hot weather of 1931 showed 11 per cent success from dibbling, 89 per cent from notching germinating seed, and 64 per cent from stump planting. The cost of the work was Rs. 107-8-0.

Modified Taungya Coupe III of Lakkavaram reserved forest (20 acres).—Valueless species and undergrowth were cut and by in January and March 1931 at a cost of Rs. 119.

Modified Taungya Coupe IV of Pulusumamidi reserved forest (30 acres).—Ten to fifteen teak seeds were dibbled at stakes over 5 acres in April 1930 and, maddi (*Terminalia tomentosa*), yegesi (*Pterocarpus marsupium*) and somi (*Soyimida febrifuga*) seeds were dibbled at stakes over 6 acres in June 1930. In the same month, 12,000 teak stumps were planted over 10 acres. In July 1930, 6,000 teak seedlings were transplanted over 5 acres and 3,600 germinating teak seeds were notched over 4 acres. The espacement in all these cases was 6' x 6'. Casualties were replaced with 850 teak stumps, 2,800 germinating teak seeds and 2,000 teak seedlings in July and August 1930. Enumeration at the end of the hot weather of 1931 showed as successful, 48 per cent in dibbling teak seeds, 82 per cent in stump planting of teak, 59 per cent in germinating teak seeds, 37 per cent in dibbling somi seeds (*Soyimida febrifuga*), 20 per cent in dibbling yegesi (*Pterocarpus marsupium*) seeds, 31 per cent in dibbling maddi (*Terminalia tomentosa*) seeds. The operation cost Rs. 135.

Clear-felling in teak forest followed by artificial regeneration in patches deficient in teak was carried out in the following coupes. The dibbling of teak seeds in all these coupes was done with 10 to 12 seeds per stake, the espacement being 6' x 6'.

Coupe III of Peddamidisileru reserved forest (25 acres).—Teak seeds were dibbled in April 1930. Casualties were replaced with 3,800 germinating teak seeds. In addition, somi (*Soyimida febrifuga*) and yepi (*Hardwickia binata*) seeds were dibbled at stakes over 2 acres. The operation cost Rs. 11. Enumeration at the end of the hot weather of 1931 showed 50 per cent success over the area dibbled with teak. The somi and yepi dibbling was a complete failure due to the soil being gravelly.

Coupe VI of Dummugudem reserved forest (61.27 acres).—Fifteen thousand stakes were planted over 15 acres in April 1930 and teak seeds dibbled in April and May 1930. Casualties were replaced in July 1930 by notching germinating teak seeds. The cost of the operation was Rs. 40. The percentage of success was 27.

Coupe X of Tunikicheruru reserved forest (45 acres).—Eleven thousand five hundred and forty-six stakes were planted over 9 acres and teak seeds dibbled in May 1930. Maddi (*Terminalia tomentosa*) seeds were dibbled at stakes over 1½ acres. The operation cost Rs. 28-14-0. The percentage of success was 8.

Coupe X of Ramachendram reserved forest (54½ acres).—In April 1930, 9,125 stakes were planted over 7½ acres and teak seeds were dibbled at stakes. Casualties were replaced in July 1930 by notching 1,665 germinating teak seeds. The cost of the operation was Rs. 22. Percentage of success was 42.

Coupe VI of Sitarampuram reserved forest (31 acres).—In April 1930, 5,850 stakes were planted over 5 acres and teak seeds were dibbled. Casualties were replaced by notching 850 germinating teak seeds and by transplanting 100 teak seedlings. The cost of the operation was Rs. 12. The percentage of success was 50.

Coupe IV of Walsugri reserved forest (29 acres).—Teak seeds were dibbled in April 1930 over 5 acres. Casualties were replaced with 300 teak stumps and 2,000 germinating teak seeds. The cost of the operation was Rs. 9. The percentage of success was 27.5.

Lower Godavari.—An area of 74 acres in Coupe VII of Kandikuppa reserved forest was planted up with casuarina at a cost of Rs. 1,279 in July 1930 from seedlings raised in nursery. Casualties occurred from November onwards owing to lack of rains, and were replaced.

The casualties in Coupe VI planted during the previous year were also replaced.

Guntur.—In the coupes worked in 1929-30 in Guttikonda and Jellavagu sections of Vinukonda range and in Venkatayapalem and Kondapalli reserved forests of Guntur range, the rubbish resulting from the fellings and the thorny species were gathered into heaps 15 to 25 feet in diameter and the heaps burnt in the hot months of May and June. The soil in the burnt patches was dug up and seeds of *Hardwickia binata*, *Albizia lebbek*, *Albizia amara*, *Azadirachta indica*, *Acacia Sundra* and *Sapindus trifolius* were sown broadcast as a mixture, germination was good in all the patches and the survivals at the end of the year were fairly large.

Nellore.—An area of 50 acres of Coupe II of the Casuarina Planting Series C in the Sriharikota range was planted with casuarina during the year at a cost of Rs. 1,203.

18. Nil.

(c) Afforestation.

(iii) Plantations and other forms of regeneration not under working plans or schemes.

19. Lower Godavari—Peddapur range, Ammayagoppi valley.—The plantation of 1928 is thriving well. The plants in the stumped and sown area are about 2½ feet in height. Two or three of these flowered. Owing to lack of rains during the previous season there was not much appreciable growth.

In the plantation of 1929 (10 acres) the height growth in the uncultivated area of 1 acre was better than that in the area (1 acre) of one year under cultivation. Sowings over an area of 3 acres in this plantation were a failure due to lack of timely rains.

A third plot of 10 acres was clear-felled and burnt during the year and was prepared for regeneration during the rains of 1931-32.

Gokavaram range.—An experimental plot of 2 acres in each of Sudikonda, Tirumalayapalem and Mallavaram reserved forests was regenerated by dibbling teak seeds in patches at a cost of Rs. 116. The experiment proved a success.

Rajahmundry range.—Casuarina was planted over 2 acres on the Sandbar in Coringa Extension reserved forest at a cost of Rs. 62. The seedlings subsequently died owing to heavy gale and inundation by the sea.

Guntur.—Forty-five acres in Nizampatam reserved forest were planted with casuarina at an espacement of 7 feet to regenerate a sandy waste. The expenditure in 1930-31 was Rs. 1,583.

The planting was done between 28th June and 10th July 1930. The survivals in March 1931 were 31,000 seedlings and the success was nearly 80 per cent.

(iv) Tending of Areas under regeneration.

20. *Upper Godavari*.—Teak seedlings and coppice shoots were tended by cutting of weeds, climbers and regrowth of inferior species and of bamboos in all clear-felled and modified taungya coupes.

Lower Godavari.—The casuarina plantation in Coupe II of Kandikuppa reserved forest was thinned at a cost of Rs. 277 and that in 3.4 acres of casuarina plantation near Brahmasamudayam at a cost of Rs. 33. Cleaning side branches was done in Coupe III of Kandikuppa casuarina plantation and in 14.25 acres near Brahmasamudayam, at a cost of Rs. 71.

Weeding operations and working up of soil, etc., were done in the teak plots of Rajavomangi reserved forest at a cost of Rs. 109. Osurpad and Pakalagudem teak plots were tended at a cost of Rs. 27.

SECTION 2.—TENDING OF THE GROWING STOCK.

21. The following silvicultural works were undertaken:—

Ganjam.—(1) Heaping and burning of refuse stuff and cutting switch growth in the following coupes:—

(a) Coupe XII-a and b (152 acres) of Plains Sal Timber Working Circle, Series I, in Gallery reserved forest at a cost of Rs. 568.

(b) Coupe XII-a, b and c (49 acres) of Plains Sal Timber Working Circle, Series II, in Kriamba reserved forest at a cost of Rs. 196.

(c) Coupe IX (96 acres) of Ravine Working Circle in Rambha reserved forest at a cost of Rs. 426 (Rs. 42 spent in May 1931).

(d) Coupe I (18 acres) of Ravine Working Circle in Kriamba reserved forest at a cost of Rs. 72.

(2) Cleaning operations were conducted in the following coupes:—

(a) Coupe X-a and b (134 acres) of Plain Sal Timber Working Circle, series I, in Galleri reserved forest at a cost of Rs. 339.

(b) Coupe XI-a and b (32 acres) of Plain Sal Timber Working Circle, Series II, in Kriamba reserved forest at a cost of Rs. 83.

(c) Coupe VIII-a and b (114 acres) of Ravine Working Circle in Rambha reserved forest at a cost of Rs. 103.

(d) Pole coupes in—

(i) Mojjogoda range over 146 acres at a cost of Rs. 139.

(ii) Russellkonda range over 709 acres at a cost of Rs. 696.

(iii) Bontha range over 171 acres at a cost of Rs. 170.

(iv) Buguda range over 342 acres at a cost of Rs. 324.

(v) Surada range over 427 acres at a cost of Rs. 396.

(3) Second cleaning was done in the following coupes:—

(a) Coupe X (138 acres) of Plains Sal Timber Working Circle, Series I, in Galleri reserved forest at a cost of Rs. 245.

(b) Coupe X-d (19 acres) of Plains Sal Timber Working Circle, Series II, in Kriamba reserved forest at a cost of Rs. 24.

(c) Coupe VII (42 acres) of Ravine Working Circle in Rambha reserved forest at a cost of Rs. 79.

(d) Coupe VI-a, b and c (47 acres) of Ravine Working Circle in Rambha reserved forest at a cost of Rs. 53.

(4) Thinnings were done in—

(a) Coupe IV-a, b, c and d (153 acres) of Plains Sal Timber Working Circle, Series I, in Chendragiri reserved forest at a cost of Rs. 145.

(b) Coupe IV-a, b, c, d, e, f, g and h (47 acres) of Plains Sal Timber Working Circle, Series II, in Kriamba reserved forest at a cost of Rs. 40.

(c) In Pole coupes—

- (i) Russellkonda range over an area of 241 acres at a cost of Rs. 255.
- (ii) Bontha range over an area of 58 acres at a cost of Rs. 57.
- (iii) Buguda range over an area of 94 acres at a cost of Rs. 100.
- (iv) Surada range over an area of 101 acres at a cost of Rs. 104.
- (v) Pondakhol range over an area of 126 acres at a cost of Rs. 126.

(5) Fourth-year climber-cutting and some special climbing operations, where needed, were also carried out.

Vizagapatam.—In areas not actually under regeneration, climber-cutting was done by the beat subordinates free of cost and by the coupe contractors in the current felling areas. Climber-cutting in sal areas was done where it was needed.

Upper Godavari.—Congested patches of teak in Teak Clear-felled Coupe III of Ramachendram reserved forest were thinned over 38 acres at a cost of Rs. 10. Climber-cutting was done by subordinates free of cost in portions of reserves during their patrol.

Lower Godavari, Gokavaram range.—Climbers were cut in felled coupes at a cost of Rs. 48.

Polavaram range.—Cleaning and climber-cutting was done in the worked timber coupes of Kopalli and Bedadavole reserved forest at a cost of Rs. 31.

Softwooded species in the teak lanka of Bedadavole reserved forest were girdled at a cost of Rs. 15.

Advance thinnings and regeneration fellings were done in Coupe IX of Kopalli reserved forest at a cost of Rs. 10.

Bamboo growth interfering with valuable species in Coupe VI of Kopalli and Kovvada Teak Felling Series was cut at a cost of Rs. 5.

Rajahmundry range.—Climber-cutting was done at a cost of Rs. 40 in the felled coupes of Devancheruvu reserved forest.

Climbers were also cut by the beat staff free of charge in the course of their patrols.

Guntur.—Climber-cutting in the marked coupes was the only operation undertaken. This was done by the subordinates free of cost.

Nellore.—Euphorbea and climbers in coupes under working were cut by contractors. In other areas climber-cutting was attended to by the subordinates.

General.

22. *Vizagapatam.*—Sandal seeds were dibbled in May 1930 in Dharakonda, Sanivaram and Srugudu reserved forests (Narasapatam range), but the operation was not successful as the very few seeds that germinated died owing to the failure of rains and severe heat.

Five pounds of sandal seeds were sown in different places of the felled fuel coupes in Palkonda range with a view to serve as propagation centres. But the operation was a failure due to bad quality of seed and unsuitable locality selected for sowing. The District Forest Officer is being instructed to bestow his personal attention and see that only good seeds and suitable localities are selected during 1931–32.

Sandal trees in the reserved forests are thriving well and many have become seed-bearers. Around the felled coupes in Karaka, Arlova and Madalammakonda reserved forests in the Narasapatam range, 5,240 palmyra seeds were sown. The sowing was a failure due to want of rains and to severe summer.

The divi-divi plants reported to have been surviving in previous years were thriving well during the year also.

Lantana was eradicated in Arlova and Karaka reserved forests over 5 acres at a cost of Rs. 20.

Upper Godavari.—Natural regeneration in most of the reserved forests was satisfactory. Area artificially regenerated with teak was systematically increased. General growth of teak was satisfactory.

Lower Godavari.—Growth of teak was fairly satisfactory in the regenerated areas of Peddapur and Gokavaram ranges. Natural regeneration of other important species was good.

Guntur.—In Kondapalli reserved forest sandal seeds were sown in June 1930 in twenty fenced plots of one-fourth acre each under bushes near water-sources. The seeds germinated at the end of August 1930. Survivals at the end of the year were 701 plants in all the twenty plots.

As usual, babul (*Acacia arabica*) seeds were sown in a 5-acre plot in Nayudupalem reserved forest. The plot was first sold to a contractor for clear-felling the babul growth and he then fenced it. Four hundred goats and 300 sheep were penned and fed with babul pods. The seeds from their droppings were spread over the area which was subsequently ploughed twice. Twelve pounds of babul, cotton and babul seeds from droppings were sown in June 1930 and the seeds germinated in August 1930. Though the germination was at first successful, a portion of the area was submerged

under water for nearly a fortnight in November 1930 owing to heavy rains and so many of the seedlings died. The elevated portion of the plot (about 3 acres) which escaped from being flooded is fully stocked with babul seedlings which are on an average 2 feet high. In the submerged places the stocking is thinly distributed.

Nellore.—Sandal seeds were sown in five plots in Udayagiri range in June, July and October 1930. At the end of the year 494 seedlings were observed but they are said to have been in a precarious condition.

CHAPTER IV.—EXPLOITATION.

(a) SYSTEM OF MANAGEMENT.

(i) Major Produce.

23. The following statement shows the areas exploited during the year under the various silvicultural systems in each division:—

Divisions.	Clear felling.	Simple coj price.	Selection fellings.	Improvement fellings.	Bamboos.
	ACS.	ACS.	ACS.		ACS.
Ganjam	315	1,280	8,912	..	19,045
Vizagapatam	18	470	172	..	23,824
Upper Godavari	257	..	..	..	101,801
Lower Godavari	90	2,033	..	..	45,482
Guntur	..	1,170	..	..	2,565
Nellore	..	2,125	..	..	..
Total, First Circle ..	680	7,078	9,084	..	192,718

Clear-felling—Ganjam.—In Ghumsur forests clear-fellings were carried out in both the series of the Plains Sal Timber Working Circle and Ravine Working Circle as detailed below:—

Series I, Periodic Block I.—Coupe XII of this series was located in Kutnikuppa and Miniari blocks consisting of 152 acres and was put up to auction. Though fair prices were offered, it was believed that a larger profit could be made by departmental working and it was decided to extract the useful timber departmentally offering the residual growth for sale. The result of the operation was as follows:—

Cost of operation—Rs. 1,939—8—0.

	C.F.T.
Outturn timber	18,705
“ poles	16,580
Total	35,285

Of this, 18,600 cubic feet was sold for Rs. 3,790—12—0. The residual growth in the coupe was sold for Rs. 1,098. There is a balance of 16,685 cubic feet in stock for disposal in 1931—32.

Series II, Plains Sal Timber Working Circle.—In Coupe XII of 49 acres in Buguda range useful timber was extracted departmentally at a cost of Rs. 1,479. Outturn 15,326 cubic feet was sold for Rs. 3,689. The residual growth was sold for Rs. 1,176.

Ravine Working Circle, Series I, Coupe IX of 96 acres in Rambha reserve was sold for Rs. 1,248 at Rs. 13 per acre. In Series II, Coupe I of 18 acres in Buguda was sold for Rs. 315 at Rs. 17—8—0 per acre.

Vizagapatam.—An area of 18 acres of Sal Coupe IV in Palakonda range was clear-felled, and 3,598 cubic feet were taken to the sale depot at Viraghattam and sold for Rs. 2,375—about 1,000 cubic feet of small poles were sold in the coupe for Rs. 50 bringing the total revenue to Rs. 2,425.

Upper Godavari.—The following coupes were clear-felled departmentally and the financial results of working are given below:—

Range.	Reserve and coupe number.	Yield in cubic feet.	Area in acres.	Gross expenditure.	Gross revenue.	Cost per acre.	Net revenue per acre.
				RS.	RS.	RS.	RS.
Pulusumamidi.	Walsugri C. No. IV.	Teak .. 8,447 Non-teak .. 4,269 Total .. 12,716	29	1,463	..	50	..
Marrigudem ..	Seetharampuram C. No. VII.	Teak .. 4,343 Non-teak .. 4,434 Total .. 8,777	35	1,561	1,689	45	..
Do. ..	Ramachendram C. No. X.	Teak .. 3,517 Non-teak .. 5,827 Total .. 9,344	54½	1,363	..	45	..
Bhadrachalam.	Dummugudem C. No. VI.	Teak .. 8,957 Non-teak .. 5,636 Total .. 14,593	61	2,609	1,373	43	..
Do.	Tanikicheruvu C. No. X.	Teak .. 3,815 Non-teak .. 4,233 Total .. 8,048	45	1,555	1,968	35	..
Cherla ..	Peddamidisileru.	Teak .. 2,647 Non-teak .. 1,039 Total .. 3,686	25	660	..	26	..

Owing to serious slump in the timber market the sales held in October and December 1930 were a failure. All the teak timber and a portion of the teak of Coupe X of Tunikicheruvu, all teak of Coupe VI of Sitaramapuram and a portion of teak and non-teak of Coupe VI of Duggugudem was sold on tender and by piecemeal auction sales in small lots. The amounts noted above against these coupes represent the realizations by this method.

The following timber coupes were partly worked during the year. Their results will be reported in 1931-32:—

- (1) Coupe VII of Dummugudem reserved forest.
- (2) Coupe VII of Sitaramapuram reserved forest.
- (3) Coupe V of Walsugri reserved forest.
- (4) Non-teak Coupe IV of Lakkavaram reserved forest.
- (5) Non-teak Coupe VI of Rekapalli reserved forest.

Coupe No. XI of Ramachendram and Tunikicheruvu reserved forest and Coupe IV of Pedamidileru reserved forest were not worked owing to general trade depression.

Lower Godavari.—Timber Coupes IX of Bedadavole (54 acres) and VII of Koppalli (36 acres) were worked through the agency of contractors.

Selection fellings—Ganjam.—In accordance with the prescriptions of the revised working plan selection fellings were carried out in the following reserves:—

Mojjogoda range.—Coupe I of 749 acres in Darpangia reserved forest—yield 8,403 cubic feet—revenue Rs. 4,664. Expenditure incurred on extraction was Rs. 550.

Russellkonda range.—Coupe I of 2,165 acres in Baiballi reserved forest—yield 4,854 cubic feet—revenue Rs. 1,290. Expenditure Rs. 275.

Kukuluba range.—Coupe I of 3,841 acres in Chendragiri reserved forest—yield 18,700 cubic feet—revenue Rs. 4,461. Expenditure Rs. 1,253.

Bontha range.—Coupe I of 1,217 acres in Paichalia reserved forest—yield 20,094 cubic feet—expenditure Rs. 1,399; only 3,957 cubic feet were sold during the year for Rs. 275.

Surada range.—Coupe I of 940 acres in Pippalaponka reserved forest—yield 2,094 cubic feet—revenue Rs. 210. Expenditure Rs. 150.

Vizagapatam.—Dead and dying sal trees of 4½ feet in girth and above were removed from Sal Block IV of Palakonda range, yield 6,861 cubic feet of timber and 200 cubic feet of branchwood which were sold for Rs. 9,937.

Simple coppice.—The fuel coupes in all the divisions were worked under the Simple Coppice system except in the mangrove forests of Repalle range, Guntur district, where five seed-bearers were left per acre.

Unregulated fellings.—These were as usual confined to the unreserved lands in all divisions but mainly in Upper Godavari and Rampa in Lower Godavari.

In Upper Godavari 57,323 cubic feet of timber and 47,860 cubic feet of fuel were removed from the unreserves. Rupees 4,374 and Rs. 810 respectively were realized during the year.

(ii) Minor Produce.

24. *Bamboos and minor produce.*—The right to collect bamboos was as usual leased out to contractors in all the divisions. But in Upper Godavari permits were also issued to local people for removal of bamboos from coupes not leased out during the year. Bamboos were sold on a large scale from the unreserve of lower Godavari and Rampa.

Minor produce was generally leased out to contractors except in the Sriharikota range of Nellore district where it was collected departmentally to afford congenial employment to the Yanadis. In Vizagapatam district the hillmen of the Agencies were allowed to collect minor forest produce free. Most of this produce is brought by them for sale at recognized shandies where seigniorage is collected from purchasers at fixed rates. The right to collect seigniorage was leased out in auction for a sum of Rs. 6,528. In Rampa the sale system prevails but seigniorage is collected by the department at recognized shandies, the amount realized being about Rs. 30,300.

Nux vomica.—Only in Lower Godavari was the produce leased out separately for Rs. 225. Elsewhere it was sold along with other kinds of minor forest produce.

Cassia auriculata (tangedu) bark.—In Vizagapatam this could not be sold for want of demand and it is never leased out in Ganjam as it does not occur in sufficient quantities. In Lower Godavari the previous year's lease was in force during the year under report. In Guntur an amount of Rs. 689 was realized and in Nellore Rs. 6,984. The tangedu bark contractors have constantly complained during the year about the fall in prices of bark and sought for extensions for payment of kists. Almost all due have been collected.

Cassia fistula bark.—The right to collect this bark was leased out in Ganjam for Rs. 1,560. Elsewhere there was no demand for this.

Diospyros melanoxylon (tumki) leaves.—The right to collect these leaves was sold in Upper Godavari for Rs. 3,300; but the contractor did not work at it during the year on account of financial depression.

Fodder grass and hay.—In Ganjam the right to cut and collect grass in Napier's Park reserved forest was leased for Rs. 12. The Revenue Department realized Rs. 42 by the sale of grass in un-reserves. In Lower Godavari the right to cut and remove grass from Coringa and Kandikuppa reserved forests was leased out for Rs. 405.

Grazing was as usual regulated by issue of a single permit for the whole range except in Nellore where grazing under the Kancha system prevails. Free removal of grass in headloads is permitted in every district. In Nellore, free removal from closed areas attached to kanchas is allowed under the control of the kanchadars who are responsible for the good protection of the areas.

Manure leaves.—In Nellore, the right to collect manure leaves in Sathiavedu range was sold for Rs. 390.

(b) AGENCY OF EXPLOITATION.

(i) Departmental Agency.

25. The outturn of major produce by departmental agency is compared with that of the previous year in the following statement:—

Year.	Timber in thousands of cubic feet.	Fuel in thousands of cubic feet.	Bamboos value.	Minor forest produce value.
1929-30	120	49	Rs. 387	Rs. 14,307
1930-31	196	80	271	7,100

The increase under timber occurs mainly in Ganjam and is due to the resumption of departmental extraction of timber from the Plains Sal Timber Working Circle and Selection Working Circle coupes and in Vizagapatam to extraction of large quantity of sal timber in Palakonda range.

The increase under fuel occurs in Ganjam due to arrears in thinnings being brought up to date and in Lower Godavari to undertaking arrear thinnings in Kandikuppa casuarina plantation.

The decrease under minor forest produce occurs mainly in Nellore and is due to considerable fall in prices owing to trade depression. A large quantity of nux vomica could not be sold before the close of the year under report owing to failure of sales. It was sold after the close of the year.

(ii) By purchasers.

26. The following statement shows the quantity of major produce and the value of minor produce removed by purchasers during the year and in the previous year:—

Year.	Timber in thousands of cubic feet.	Fuel in thousands of cubic feet.	Bamboos.	Grass and grazing.	Other minor forest produce.
1929-30	863	3,081	Rs. 1,65,189	Rs. 1,13,679	Rs. 1,17,083
1930-31	506	2,680	1,32,624	1,06,827	1,11,096

Timber.—The decrease is due to working the Plains Sal Timber Working Circle and Selection Working Circle coupes departmentally in Ganjam; less assignments of land in Palakonda range of Vizagapatam district by Revenue authorities and in Lower Godavari to the area of coupes being less than in the previous year.

Fuel.—The decrease occurs in Lower Godavari due to existence of blanks in coupes and suspension of the contractor's work in the Kandikuppa mangrove coupe for non-payment of kists and in Nellore due to transfer of Kanigiri range to Second Circle and inclusion of the value of growth in Kollurpad plantation in 1929-30.

Bamboos.—The decrease is due to the depression in the market.

Grazing.—The decrease is attributed to cattle mortality and late setting in of monsoon in Ganjam, Vizagapatam and Guntur districts.

Minor forest produce.—The decrease is due to failure of tamarind crop and to general trade depression.

The accuracy of contractors' accounts was verified by check of removals in transit and punishing cases of removal without permits issued by contractors.

(iii) & (iv) By right-holders, and under privileges and free grantees.

27. The following table shows the quantity and value of the produce removed under this head:—

	Timber in thousands of cubic feet.	Value.	Fuel in thousands of cubic feet.	Value.	Bamboos.	Grazing.	Other produce.	Total
Right-holders	18	Rs. 1,643	55	Rs. 3,025	Rs. 1,310	Rs. 187	Rs. 335	Rs. 5,190
Free grantees	115	11,735	112	17,165	1,310	14,818	2,027	47,065

The Khonds of Chokkapad khandam have a right for free removal of timber, etc., for their domestic and agricultural purposes and free grazing of cattle. The Khonds elsewhere than in Chokkapad were granted concessions for rendering the necessary help in putting out fires.

In Vizagapatam, free grazing to the extent of Rs. 1,109 was allowed in the Dharakonda, Sanivaram and Karaka reserved forests to the hillmen and inhabitants of the neighbouring villages for services rendered by them in fire protection.

In Lower Godavari, the Koyas and Reddis of the Agency continued to enjoy the free removal of unclassified timber for domestic and agricultural purposes.

Free grants of timber and minor forest produce were made in all the districts mainly for rebuilding houses destroyed by fire. The fuel supplied to the Port Conservancy Board, Cocanada, from the Coringa Extension reserved forest valued at Rs. 17,056, is also shown under free grants as usual.

(c) OUTTURN AND SOURCES OF FOREST PRODUCE.

28. The total outturn from all agencies is compared in the following statement:—

Year.	Timber in thousands of cubic feet.	Fuel in thousands of cubic feet.	Bamboos.	Gross value of minor forest produce including grass and grazing.
1929-30			RS.	RS.
1930-31	1,096	3,258	1,66,489	2,61,665
	835	2,927	1,41,205	2,42,390

CHAPTER V.—FINANCIAL RESULTS.

29. The following figures show the financial position of the Circle as compared with that of the previous year:—

				1929-30.	1930-31.
<i>Receipts.</i>					
				RS.	RS.
Revenue	...	...	...	10,96,594	7,46,131
Deduct Refunds	...	...	...	8,978	5,409
Net revenue	...	...	...	10,87,616	7,40,722
				(a) — 1,21,000	

		1929-30.	1930-31.
		RS.	RS.
<i>Expenditure.</i>			
Conservancy and maintenance	...	1,51,669	1,52,834
Establishments	...	4,58,339	4,63,473
52.A. Capital outlay on Forests	...	43,854	33,481
		(a) — 1,21,000	
Total expenditure	...	6,53,862	6,49,788
		(a) — 1,21,000	
Surplus	...	4,33,754	90,934

(a) Represents adjustments in supplemental March Final accounts of 1929-30 on account of Russellkonda Saw Mill.

The following statement shows the financial position of each division during the year under report and a comparison of surplus or deficit with that of the previous year:—

Division.	1930-31.			Surplus or deficit in 1929-30.
	Revenue.	Expenditure.	Surplus or deficit.	
	RS.	RS.	RS.	RS.
Direction	450	47,346	— 46,896	— 39,265
Ganjam	98,517	1,63,630	— 65,113	+ 1,14,810
Vizagapatam	53,595	51,246	+ 2,349	+ 6,099
Upper Godavari	40,633	1,12,521	— 71,888	+ 31,428
Lower Godavari	2,57,836	1,21,949	+ 1,35,887	+ 1,81,908
Guntur	1,57,093	75,614	+ 81,479	+ 81,501
Nellore	1,32,598	71,482	+ 61,116	+ 54,273
Total	7,40,722	6,49,788	+ 90,934	+ 4,33,754

The above statement shows that Ganjam and Upper Godavari divisions worked at a loss and all the other divisions at a profit.

In Ganjam the deficit is due to there being no adjustments on account of recoveries from Government Commercial Undertakings (Russellkonda Saw Mill) during the year, and to poor prices obtained for timber extracted departmentally and for fuel coupes.

In Upper Godavari the deficit is entirely due to there being no demand for the timber extracted departmentally and to poor prices realized for bamboo coupes owing to trade depression.

The important variations between the actuals of 1930-31 and those of the previous year are explained below:—

RECEIPTS.

Timber and other produce removed by Government agency—
(Timber Rs. 81,724).—The decrease occurs mainly in Godavari

Upper division and is due to the timber extracted departmentally not having been sold, there being no demand for it.

Other produce (Rs. — 7,011).—The decrease occurs mainly in Nellore and is due to lower rates realized for minor forest produce collected departmentally in Sriharikota range and to non-sale of nux vomica during the year. It was sold after the close of the year.

Timber and other produce removed by consumers and purchasers.—*Timber* (Rs. — 39,108).—The decrease occurs chiefly in Ganjam (Rs. — 13,646). Upper Godavari (Rs. — 16,598) and Lower Godavari (Rs. — 8,678). In Ganjam the decrease is due to working the timber coupes departmentally; in Upper Godavari the decrease is due to sale of unreserve Coupe XIII of Cherla range due in 1930–31 a year earlier and to less number of darkhasts for lands containing timber; and in Lower Godavari to less removals of timber from Rampa and fall in the sale price of Koppali timber coupe in Polavaram range.

Bamboos (Rs. — 25,616).—The decrease occurs chiefly in Upper Godavari (Rs. — 11,364), Lower Godavari (Rs. — 9,694) and Guntur (Rs. — 2,532) and is due to the general trade depression and consequent slump in the Rajahmundry market.

Grazing (Rs. — 6,648).—The decrease occurs in Ganjam, Vizagapatam, Guntur and Nellore divisions and is due to late setting in of the monsoon and cattle mortality in the first three divisions and to non-sale of a greater number of kanchas in Nellore district than in the previous year.

Other minor forest produce (Rs. — 9,180).—The decrease occurs mainly in Lower Godavari and Guntur and is due to the failure of minor forest produce crop, specially tamarind.

By Revenue Department.—*Timber* (Rs. — 15,586), *firewood* (Rs. — 5,704) and *other minor forest produce* (Rs. — 17,310).—The decrease occurs generally in Ganjam, Vizagapatam, Lower Godavari and Guntur. These are fluctuating items and is generally attributed to less extent of area assigned on dharkhast.

EXPENDITURE.

8. b. *Conservancy and Works*—*Timber, etc., removed by Government agency*—*Timber* (Rs. + 3,379).—The increase is due to departmental working of timber coupes in Ganjam instead of selling them standing and to extraction of a larger quantity of timber in the Palakonda range in Vizagapatam district than in the previous year.

1. *Minor forest produce* (Rs. + 2,745).—The increase is due to collection of a larger quantity of minor forest produce departmentally in the Sriharikota range in Nellore district.

II. *Forest produce removed by private agency* (Rs. + 4,301).—The increase occurs in Ganjam, Godavari Upper, Guntur and Nellore and is due to the entertainment of the full sanctioned strength of reserve watchers during the year.

III. *Maintenance, repairs and renewals*—(a) *Feed and keep of cattle* (Rs. + 1,473).—The increase appears to be due to a wrong adjustment in the March final accounts of the Accountant-General. He has been addressed.

(b) *Renewals, replacements of stores, etc.* (Rs. — 17,644).—The decrease occurs in Nellore and is due to there having been no renewal of tram materials during the year as in the previous year.

Communications and buildings—*Roads and bridges* (Rupees + 1,331).—The increase occurs in Ganjam and is due to more roads having been repaired.

Buildings (Rs. + 4,421).—The increase occurs mainly in Ganjam and is due to extensive repairs done to Extra Assistant Conservator's quarters at Russellkonda and Balliguda.

Conservancy and regeneration—*Maintenance of boundaries* (Rs. + 839).—The increase occurs in Upper and Lower Godavari divisions and is due to the triennial clearance of the boundary lines between Government and dupati (zamindari) lands in the former and maintenance of a greater length of lines in Rampa in the latter division.

V. *Miscellaneous*—*Rent of leased forests* (Rs. + 1,908).—The increase occurs in Lower Godavari and represents adjustments made by the Accountant-General towards payments of forest compensation to muttadars in Rampa made by Revenue Department.

52. A. *Capital Outlay on Forests*—*Forest surveys* (Rupees — 8,475).—The decrease is due to no fresh special forest surveys having been undertaken in the Circle.

Demarcation (Rs. + 2,022).—The increase occurs in Ganjam and Godavari Lower and is due to greater progress in the demarcation of blocks selected for reservation in Balliguda and Rampa.

Sowing and planting (Rs. + 4,545).—The increase is due to debit to this head of expenditure in Godavari Lower and Guntur on casuarina planting. In the previous year this expenditure in Lower Godavari was debited to '8. b. Conservancy and Maintenance', and no expenditure was incurred in Guntur.

Communications and buildings—*Roads and bridges*—*Works in progress* (Rs. + 3,313)—*New works* (Rs. — 2,827)—*Buildings*—*Works in progress* (Rs. + 1,644)—*New works* (Rs. — 5,313).—The expenditure depends upon the number of works undertaken. The important works carried out during the year are given

in Chapter II. Besides, on account of financial stringency no new works not commenced by October 1930 were undertaken.

Livestocks, stores, tools and plant—Purchase of livestock (Rs. — 4,086).—No new purchase of livestock was made during the year under report.

Purchase of stores, tools and plant (Rs. — 1,091).—The expenditure on this account has been restricted to the minimum requirements owing to financial stringency.

S. c. District Establishments—Pay of officers—Voted (Rupees + 10,683).—The increase is due to the posting of a Provincial officer to Guntur district.

Pay of establishment—Permanent (Rs. — 9,552).—The decrease is due to the transfer of Kanigiri range to Kurnool South division in the II Circle.

Travelling Allowance—Non-voted (Rs. — 2,052).—The decrease is due to there having been a fewer number of Imperial Service officers in 1930–31 than in 1929–30 in the Circle.

Travelling Allowance—Voted (Rs. — 1,578).—The decrease is due to observance of economy.

Non-contract Contingencies—Rates and Taxes—Non-voted (Rs. + 2,171)—Rents—Voted (Rs. + 1,019).—The increase is due to payment of arrear amounts during the year.

The outstanding revenue at the close of the year amounted to Rs. 85,115–12–6 of which only Rs. 20,595 fell due within the year against Rs. 14,751 in the previous year. Out of the amount of Rs. 85,115–12–6 outstanding at the close of the year, Rs. 55,216–13–0 represents balance of lease amounts of fuel coupes to be worked in 1931–32 in Sriharikota range, Nellore, the first instalments for which have been collected in March 1931.

Of the revenue realized in the year 43 per cent was from major produce, 49 per cent from minor produce and 8 per cent from other sources.

Of the expenditure 12 per cent relates to exploitation, 62 per cent to improvements and upkeep of forests and 26 per cent to miscellaneous items.

CHAPTER VI—RESEARCH AND EXPERIMENTS.

(a) RESEARCH.

30. Nil.

(b) EXPERIMENTS.

31. *Ganjam.*—As regards the sal regeneration experiments in the ravine areas of Rambha reserve referred to in the last year's report, it remains now to ascertain whether and to what extent and

in what period the seedlings established on the various plots will advance to the switch stage. Details of the experiments and instructions for its future management are embodied in the revised working plan for the Ghumsur forests where an enumeration in July 1931 is prescribed.

The measures to be taken to provoke natural regeneration of sal in the Ravine Working Circle (over parts of which the natural regeneration is notoriously deficient) were under the consideration of the working plans staff during the year and in the revised working plan definite prescriptions for experimental measures are laid down. These will be initiated in 1931–32.

Vizagapatam.—The tangedu (*Cassia auriculata*) sowings were continued at the instance of the Deputy Forest Utilization Officer in a plot of six acres in the felled coupe in Arlova reserve forest, the area having been cleared of growth and the debris burnt. Ploughing was done twice and the seeds were sown in furrows three to four feet apart. The operation was successful and the cost amounted to Rs. 50.

Upper Godavari.—The six satinwood (*Chloroxylon swietenia*) sample plots opened in 1922 and 1924 in Tunikicheruvu, Bandirevu and Ramachendram reserved forests to find out the rate of girth increment of individual satinwood trees in a mixed and in a pure crop were maintained during the year. The measurements taken in the past with metallic tape having proved unreliable, measurements will be taken in 1931–32 with a steel tape and the experiment has to be treated as a new one. Regeneration experiment with *Hardwickia binata* was started. No definite conclusion can be arrived at so soon.

Lower Godavari.—The attempt made in Upputeru Block II to discover by experiments the suitable species that could be grown in the blanks proved a failure.

The experiments of growing teak artificially in Ammayagoppu valley of Rajavommangi reserved forest of Peddapur range, and Sudikonda, Tirumalayapalem and Mallavaram reserves of Gokavaram range having proved successful, it is proposed to survey the plantable area in the Gokavaram range and to undertake planting under a regular scheme.

Guntur.—The experiments started in mada (*Arvicennia officinalis*) forest in Muthayapalem reserved forest are being continued with the exception of the one in which the object was to find out if the tea-bushy appearance of mada crop in felled coupes is due to grazing and lopping of leaves for cattle fodder or to differences in tidal action. It was proved that even closed and fenced areas

did not escape the cutting of leaves for cattle fodder, and that the tea-bushy appearance of the young growth was due only to lopping and browsing and not to tidal action.

The other experiment to ascertain whether closure to grazing and lopping has any appreciable effect on the composition, stocking and development of young mada growth irrespective of tidal flooding is being continued.

Nellore.—The experimental plots opened in 1928-29 with a view to obtain reliable data of the height and girth increment of certain species, to check the coppice growth of these species, and to compare the rate of growth by retaining all the coppice shoots in some and by reducing the coppice shoots to one or two in others were maintained and the measurements were recorded in the registers.

Experiments in sowing *Cassia auriculata* seeds were continued in Sathiavedu range.

Experimental plots were opened in felled coupes in Sathiavedu and Sriharikota ranges to find out which species were best suited to improve stocking.

In Sathiavedu range four or five plots were opened in each coupe, the soil was dug up to a depth of one foot and seeds were sown in the first few days of July. The results are indicated below :—

Species sown.	Quantity of seeds in lb.	Number of seedlings on 31st March 1931.
Dirisinam (<i>Albizzia lebbek</i>) ...	133½	12,196
Seema tangedu (<i>Cassia siamea</i>) ...	26½	8,524
Yegi (<i>Pterocarpus marsupium</i>) ...	42¼	565
Sirumamidi (<i>Anogeissus latifolia</i>) ...	13	219
Tamarind (<i>Tamarindus indicus</i>) ...	10	660
Vepa (<i>Azadirachta indica</i>) ...	15	129

Cassia siamea and *Albizzia labbek* have given the best results

The following are the results of the plots opened in 1929-30 :—

Species sown.	Quantity of seeds in lb.	Number of seedlings on 31st March 1931.
Dirisinam (<i>Albizzia lebbek</i>) ...	58½	4,430
Karaka (<i>Terminalia chebula</i>) ...	36	27
Sirumamidi (<i>Anogeissus latifolia</i>) ...	40½	4,979
Tamarind (<i>Tamarindus indicus</i>) ...	28¼	578
Red sanders (<i>Pterocarpus santalinus</i>) ...	5	5

In Sriharikota an experiment was tried to see how best blanks could be restocked. An area of 1.5 acres was laid out and divided into fourteen plots (13, 1 chain by 1 chain and the 14th, 1½

chains by 1½ chains). In the thirteen 1-square chain plots, seeds of the following species were sown :—

Nim (*Azadirachta indica*), bandari (*Dodonaea viscosa*), chakereni (*Albizzia amara*), alli (*Memecylon edule*), kunkudu (*Sapindus emarginatus*), mushti (*Strychnos nux vomica*) and neredu (*Eugenia jambolana*)—The last two species did not germinate at all. Nim (*Melia indica*) was sown in two plots, in one of which there were 2,784 seedlings while in the other not one seedling was found, though the seeds were the same in quality.

Kunkudu (*Sapindus emarginatus*) with 221 seedlings gave better results than it has given before. As regards the other species, the seeds germinated but as the hot weather came on all seedlings turned yellow and gradually died off. It is probable that they will come up again in the rains.

In the 1½-square chain plot, seeds were sown in rows four feet apart. The rows were (1) bandari (*Dodonaea viscosa*), (2) alli (*Memecylon edule*), (3) nim (*Melia indica*) and (4) mushti (*Strychnos nux vomica*) and so on repeated in this order. The object was to see if the bandari which grows more quickly would serve as nurse to the other species. Mushti (*Strychnos nux vomica*) did not germinate at all; the other species germinated fairly well but died during the hot weather. There were only a few bandari (*Dodonaea viscosa*) seedlings on the lines.

The experiment will be repeated but the bandari will be sown earlier than the other species to allow it to be grown by the time the other seeds germinate.

CHAPTER VII—ADMINISTRATION.

32. Mr. J. H. Longrigg held charge of the Circle from 1st April 1930 to 16th April 1930 and thereafter Mr. F. R. Madan till the end of the year.

33. Kanigiri range of the Nellore division was transferred to the South Kurnool division of the II Circle with effect from 1st April 1930.

Mr. V. N. Seshagiri Rao, Extra Assistant Conservator of Forests and Special Forest Officer, Rampa, completed the selection and demarcation of blocks in Rampa. As Forest Settlement Officer, he completed the settlement of the following nine blocks notified under section 4 :—Vedullakonda, Addatigala, Dutcherti, Velamalakota, Musurumilli, Seethakhandi, Italapad, Kannaram and Lakshmipuram. Section 4 notifications in respect of eight other blocks were received after the close of the year.

34. *Tours.*—The Conservator toured in all the divisions of the Circle and submitted inspection notes to the Chief Conservator on Vizagapatam and Guntur districts. The total number of days spent in camp during the year fell short of the prescribed minimum by thirteen days due to Mr. Madan sustaining an accident to his foot, in February 1931, which prevented him from touring in the latter part of the year.

The touring of the District Forest Officer, Lower Godavari, alone was less than the minimum prescribed by ten days due to his having had an attack of fever after a tour in the Papikonda Hills. The other District Forest Officers spent more than the prescribed minimum in camp.

35. *Inspection of District Forest and Range offices.*—All the District Forest Offices in the Circle were inspected by the Conservator.

The District Forest Officers inspected all the range offices.

36. *Audit of accounts.*—The accounts of District Forest Offices for 1929-30 were inspected by the Accountant-General's staff and the result was generally satisfactory.

37. *Vernacular Training School.*—No Vernacular Training School was held during the year. The subsidiary session of the Vernacular Training School held in Upper Godavari during the previous two years was not held during the year under report for want of a sufficient number of subordinates to be trained.

38. *Health of establishment and sanitation.*—The health of the establishment was as usual bad in the Agency tracts, the Kukuluba and Bontha ranges in Ganjam and the Sriharikota range in Nellore.

One forester, 2 guards and 2 watchers in Vizagapatam and 2 guards in Upper Godavari died of malaria, one forester in Lower Godavari died of blackwater fever.

A watcher was murdered in Vizagapatam while on duty in connexion with a goat browsing case.

No special measures of sanitation were undertaken except clearing undergrowth round buildings.

CHAPTER VIII—GENERAL.

39. *Formation and management of panchayats (to include the forest village system).*—All the ryots' forests in the Circle are under the control of the Revenue Department except Tirumalpad reserved forest (140 acres) in the Nellore division which was transferred back to the Forest Department during the year.

The Forest Village system is not in force anywhere in this Circle.

40. *Measures for improving local supplies and facilities (including water-supply, manure leaf, etc.).*—The wants of the people in respect of small timber, fuel and bamboos were met in all the divisions except Upper Godavari (where no measures were needed owing to the existence of vast areas of unreserved and zamindari lands) by coupe contractors. There is no great demand for manure leaf in this Circle except in Sathiavedu range of Nellore where it is leased out.

Guntur.—As in the previous year, the removal of yepi (*Hardwickia binata*) leaves for fodder was allowed at 6 pies a head-load till 14th October 1930 owing to the failure of rains. Provision is being made under Chief Conservator's orders in the draft working plan permitting such removals.

As regards improvement in water-supply in grazing grounds, measures were required only in Guntur and Nellore. In Guntur five tanks in reserved forests were repaired at a cost of Rs. 394 and permission was given to the public in seven cases to repair tanks. In Nellore tanks and ponds in reserved forests were repaired at a cost of Rs. 310.

41. *Timber Transit Rules.*—The rules are reported to have worked satisfactorily. The Timber Transit Rules for Nellore have not yet been sanctioned.

42. *Jungle tribes—Ganjam.*—The Khonds continued to be on good terms with the department.

Vizagapatam.—The hill tribes availed themselves of the privileges granted to them and they were employed on all departmental works.

Upper Godavari.—The Koyas and Reddis continued to be useful and were employed on all kinds of departmental operations. Rewards to the extent of Rs. 806 were also disbursed to them in respect of areas successfully protected. They also enjoyed the privileges of free removal of produce for domestic and agricultural purposes. The Koyas and Reddis of the Bhadrachalam taluk were as usual allowed free grazing in reserves and podu in unreserves.

Lower Godavari.—The settlers in the Agency tracts rendered help to the department in return for which they were allowed the concession of grazing their cattle at 1 anna per cow or buffalo. Rewards for successful fire-protection were disbursed to them in Peddapur range.

Guntur.—The Chief Conservator's orders on the proposals for settling Chenchus in the Palnad range outside reserves were received after the close of the year and will be given effect to during the current year.

Nellore.—Sixty-eight families of Yanadis were employed on the collection of minor forest produce in the Sriharikota range. The wages earned by them amounted to Rs. 6,523 and an additional sum of Rs. 2,936 was granted to them in the shape of rice, cloth, cash and deposits in the Postal Savings Bank account. On 31st March 1931 there were 71 Savings Bank accounts totalling a deposit of Rs. 1,236 thus showing that the Yanadis are cultivating the tendency of thrift. The deposits which were previously in the name of the District Forest Officer have been transferred to the individual Yanadis.

43. *Mining and quarrying.*—The mining for mica is being carried on in some of the ryots' forests under the control of the Revenue Department in the Nellore division.

44. *Livestock—Elephants.*—The total number of elephants in the Circle was 3, as in the last year—2 in Upper Godavari and 1 in Lower Godavari. Two of these belong to the Revenue Department. Two elephants required to complete the quota of the Forest Department in the East Godavari Agency are being transferred from Nilambur division.

Other animals.—The only buffalo in the Circle which is being maintained for carrying water from a stream to the Kambakkam Hill bungalow is reported to have become very old and unfit for further work. It is to be replaced.

45. *Veterinary establishment.*—The Inspector of Livestock, Calicut, inspected the elephants in Upper Godavari in May and November 1930 and that in Lower Godavari in November 1930.

46. *Wild animals.*—There has been no trouble from tigers in Kukuluba and Bontha ranges where 'tiger scare' is usually prevalent.

47. *Civil suits.*—The two appeals filed by the contractor B. Chenchurama Nayudu referred to in the last year's report are still pending in the High Court.

48. *Control of unreserved lands by the Forest Department—Upper Godavari.*—The unreserved lands in this division are under the control of the Forest Department. The unreserve coupe in the Nugur range was not worked during the year as no purchasers came forward owing to general trade depression.

Lower Godavari.—The semi-agency tracts in Yellavaram, Chodavaram and Polavaram divisions continued to be under the control of the Forest Department. The special unreserves constituted with a view to prevent podu continued to remain under the control of the Forest Department.

49. The relations between the Revenue and Forest Departments were cordial.

50. *Russellkonda Saw Mill.*—Except the machinery and a few stores all the assets of the saw mill have been disposed of. The main mill building and drying and heating sheds which were paid for by the Public Works Department at the close of the last year were not handed over to that department and the question of refunding the amount to the Public Works Department is under correspondence.

An offer for the buildings and machinery is under the consideration of Government.

ENCLOSURE

REPORT ON EACH FOREST DISTRICT FOR 1930-31.

GANJAM.

Description.—The main seat of forest activity is in the Ghumsur and Surada taluks of the Ghumsur Revenue division where extensive sal forests have long been under close management. This tract is situated in the north-eastern portion of the district occupying the easternmost portion of the Eastern Ghats. The three reserves in the Mohiri Hills near the coast contain fuel and bamboos and are important as water catchment areas. The Eastern Ghats known as the Maliahs occupy the western part of the district. Here lie the forests of Balliguda Agency forming part of the District Forest Officer's charge since July 1927. They are capable of producing fine sal but have been much degraded by the Khonds through shifting cultivation known as podu. The importance of these forests for purposes of water conservancy is great. The main activities of Forest Department there at present are directed towards the reservation of the more important climatic forests and of those capable of producing big timber in localities where there is a reasonable chance of future development.

Area.—Reserved forest 625 square miles and 108.49 square miles of reserved lands in Balliguda Agency notified by the Agent to the Governor in Ganjam under rule 2 of the rules framed under section 26 of the Madras Forest Act.

How the Forest division is split up into subordinate and executive charges.—The whole division excluding Balliguda is divided into eight ranges consisting of 70 beats. The Balliguda Agency forms a single charge under an Extra Assistant Conservator of Forests assisted by a ranger. Practically the whole lower subordinate staff has been withdrawn and a system of protection through Patros has been initiated. The results are so far encouraging and indicate that the system ensures a thorough trial.

Cost of the administration—

	Ganjam division.	Balliguda.
	RS.	RS.
Pay of officers including travelling allowance	25,158	9,391
Pay and allowances of rangers ...	19,364	2,010
Pay and allowances of subordinate staff	27,601	1,472
Pay and allowances of office establishment	16,623	1,499
	88,746	14,372
Miscellaneous including contingencies.	5,769	
Grand Total ...	1,08,887	

Cost under important heads—

Timber operations	7,854
Roads—New works	3,996
Do. Repairs	3,018
Buildings—New works	1,640
Do. Repairs	14,074
52. A. Capital—Forest surveys	810
52. A. Capital—Demarcation, Balliguda ...	1,021
52. A. Capital—Purchase of stores, tools and plant	174
Fire-protection	6,670
Other works	5,662
Other miscellaneous items including pay of watchers	9,824
Total ...	54,743

Income from main sources—By Forest Department—

Timber	25,685
Firewood	29,282
Firewood—Balliguda	50
Bamboos	6,909
Grazing	9,148
Other minor produce	2,067
Miscellaneous revenue	8,380
	81,521
Deduct—Refunds	1,999
Total ...	79,522

By Revenue Department—

	RS.
Timber	11,256
Timber—Balliguda	139
Firewood	3,490
Bamboos	135
Other minor produce	3,975
Total ...	18,995

The chief work done in the Forest district is—

(i) In Ghumsur the supply of timber (mainly sal) from 4 felling series; and sal poles from about 20 felling series; fuel and bamboos; and regeneration of the felled areas;

(ii) in the Mohiri Hills the supply of fuel and bamboos;

(iii) in the Maliahs restriction of shifting cultivation (podu) to be followed by settlement, and conservancy and general development of roads and buildings.

PARLAKIMEDI MALIAHS.

Parlakimedi Maliahs is a separate charge managed by a Special Forest Officer under the Agent to the Governor, Ganjam. The forest blocks comprise 177 square miles and have been notified under section 26 of the Madras Forest Act.

Cost of administration—

	RS.
Pay of Special Forest Officer	7,850
Pay of establishment	18,186
Allowances—Voted	5,645
Miscellaneous including contingencies	5,396
Total ...	37,077

Cost under other important heads—

Timber operations	847
Firewood	467
Fire-protection	592
Permit establishment	1,987
Buildings—Repairs	362
Miscellaneous	425
Total ...	4,680

<i>Income from main sources—By Forest Department—</i>								RS.
Timber ...	...	...	...	...	...	...	...	11,386
Firewood	...	...	...	...	...	...	...	6,693
Bamboos	...	...	...	...	...	...	...	3,231
Minor forest produce	...	...	...	...	...	...	...	19,993
Grazing ...	...	...	...	...	...	...	...	1,456
Miscellaneous	...	...	...	...	...	...	...	1,722
Total ...								44,481

VIZAGAPATAM.

Description.—The Eastern Ghauts occupy a great part of the division. These are the Agency tracts. In the plateau of Palakonda range there is a little sal and in all eleven patches of 680 acres are covered with a fair growth of this species. This is the southern limit of sal.

The Golgonda (Gudem) Agency—area about 800 square miles—is nearly all forest, but much of it is as yet almost unknown country. But it is now being rapidly opened up and a series of pakka metalled and bridged roads are under construction by a special branch of Public Works Department. At Chintapalli which has been fixed as the headquarters of subordinate officers of all departments (Forest, Public Works Department, Revenue, Medical and Police) pakka buildings are under construction or will be constructed in the near future. In this tract the District Forest Officer is styled Special Forest Officer and works under the Agent to the Governor.

The plains portion of the district has numerous isolated hills and such of them as are reserved forests are well wooded and are divided into about sixteen felling series for supply of small timber and fuel.

None of the forests either in the plains or agency has contour maps by the Survey of India and forest work has been greatly hampered in consequence.

	SQ. MLS.
<i>Arca—</i>	
Reserved forest	307
Reserved lands	2

How the forest district is split up into subordinate administrative charges.—The whole Forest division except Golgonda Agency range is split up into two ranges consisting of 24 beats under eight sections.

N.B.—The following figures include figures for Golgonda Agency portion also.

Cost of administration—

Cost of administration—					RS.
District Forest Officer	...	...	...	...	9,537
Rangers	...	...	...	...	5,451
Subordinate staff	...	...	...	...	10,767
Clerical and menial staff	...	...	...	...	7,083
Miscellaneous including contingencies	...	...	...	...	11,837
Total					44,675

Cost under other important heads—

Timber operations	...	...	...	...	...	6,037
Road—New works	...	...	...	...	...	1,245
Do. Repairs	...	...	...	...	...	766
Regeneration	...	...	...	...	...	430
Protection from fire	...	...	...	...	...	485
Building—New works	...	...	...	...	...	509
Do. Repairs	...	...	...	...	...	1,535
Other miscellaneous items including	...	...	...	...	pay of	
watchers	...	...	...	...	...	4,782
Demarcation	...	...	...	...	...	545
Surveys—Local	...	...	...	...	...	58
					Total	16,392

Income from main sources—By Forest Department—

Income from main sources	By	...	...	...	...	...	16,557
Timber	...	...	...	...	...	...	6,025
Firewood	...	...	...	...	...	...	17,831
Bamboos	...	...	...	...	...	...	2,644
Grazing	...	...	...	...	...	...	7,127
Other minor produce	...	...	...	...	...	...	4,526
Miscellaneous revenue	...	...	...	...	...	...	54,710
Deduct refunds	...	...	...	...	...	...	107
						Net total	54,603

By Revenue Department—

Timber	...	...	...	...	...	...	1,048
Firewood	...	...	...	...	...	...	1,300
Other minor produce			...	...	...	...	2,043
					Total	...	4,391
					Grand total	...	58,994

The chief work done in the Forest district—Plains.—Supply of small timber, fuel and bamboos to the population near the forest. Some fair quality small timber mostly sal is worked from Palakonda range where a new road system has been completed. This sal area is the only source of supply of big timber which fetches a very good price, as it is very much used all over the taluk for house building purposes.

GOLGONDA AGENCY.

A start has been made to work mature selected portions of the accessible Agency forests for big timber for sale at Narasapatam (Vizagapatam district). The small forest staff is concerned to restrict unauthorized shifting cultivation (podu) by hillmen.

UPPER GODAVARI.

Description.—The forest division lies entirely in the Koya Agency on the left bank of the Godavari river. It contains many broken hill ranges. The elevation is from 200 feet to 4,466 feet. The tract is highly malarious and occasional cases of black-water fever also occur. The forest is deciduous, and contains teak, *Terminalias*, *Pterocarpus marsupium*, *Hardwickia binata*, *Kydia* and a few rose-wood and satinwood. Bamboos specially *Dendrocalamus* are very abundant in the south and east part of the division in what are called the Rekapalli hills. The Godavari river (with its tributary the Sabari) is the main line of communication with the outside world. The District Forest Officer's headquarters are at present at Kunavaram but he is permitted to spend six weeks either at Rajahmundry or Cocanada when his office also moves there. Bhadrachalam has been chosen as the new headquarters, but the building works have not yet been taken on hand. Change of the headquarters to Bhadrachalam is a change very urgently needed in the interests of the health and comfort of the District Forest Officer and his staff.

Area.—Reserved forests 830 square miles. In addition about 370 square miles of unreserved lands are under the control of the Forest Department.

How the Forest district is split up into subordinate administrative charges.—The whole forest division is divided into six ranges consisting of 53 beats under fifteen sections.

Cost of administration—

	RS.
District Forest Officer and Extra Assistant Conservator	24,514
Forest rangers	17,023
Subordinate staff	22,296
Clerical and menial staff	13,545
Miscellaneous including contingencies	2,842
Total	80,220

Cost under other important heads—

	RS.
Timber operations	5,980
Firewood	89
Demarcation	1,322
Feed and keep of cattle	2,435
Regeneration	3,526
Protection from fire	4,512
Roads—Original works	1,107
Do. Repairs	677
Buildings—Original works	1,634
Do. Repairs	2,680
Other miscellaneous items including reserve watchers	8,339
Total	32,301

Income from main sources—By Forest Department—

Timber	7,142
Firewood	812
Bamboos	16,498
Grazing	8,272
Other minor produce	3,959
Miscellaneous revenue	4,062
	40,745
Deduct refunds	112
Total	40,633

By Revenue Department.—Nil.

The chief works done in the district are (i) timber exploitation (coupes worked departmentally in reserves), (ii) regeneration mainly teak—both artificial and natural, (iii) reservation of additional timber bearing areas (about 68 square miles). A special duty extra Assistant Conservator of Forests was engaged throughout the year selecting and demarcating new blocks—The work is now completed. Draft notifications under section 4 for six blocks in 1929–30 and for eleven blocks in 1930–31 have been submitted. Seven blocks were notified under section 4 and one block was settled and draft section 16 notification for this block was submitted.

Fire-protection.—The Koyas and Reddis, who alone are employed on this work, were paid rewards to the extent of Rs. 806 for successful protection of forests in addition to wages for line-cutting.

Bamboo coupes which are leased out produce a good revenue.

LOWER GODAVARI.

Description.—Divisible into three zones—(a) the mangrove swamps of the Godavari delta, (b) the central laterite belt containing mixed deciduous forests, (c) the Rampa Agency and the Papi Hills (2,000 feet) containing timber and bamboos. Rajahmundry is the biggest market for timber and bamboos on the East Coast.

Area.—Reserved forests 571 square miles.

How the forest district is split into subordinate administrative charges.—The whole Forest division is divided into five ranges consisting of 19 sections and 54 beats.

Cost of administration—

	RS.
Pay of District Forest Officer	10,395
Pay of Special Forest Officer (Rampa)	8,333
Pay of rangers	10,159
Pay of rangers (Rampa)	900
Pay of subordinate staff	21,176
Pay of subordinate staff (Rampa)	3,981
Clerical and menial staff	8,662
Clerical and menial staff (Rampa)	792
Allowances—Non-voted	2,150
Do. Voted	10,752
Miscellaneous including contingencies	5,398
Total ...	82,698

Cost under other important heads—

Timber operations	668
Feed and keep of cattle	755
Roads—Original works	4,826
Do. Repairs	1,537
Buildings—Original works	3,277
Do. Repairs	1,854
Demarcation	4,057
Regeneration	590
Sowing and planting	2,111
Fire-protection	2,168
Rent on leased forests	4,465
Forest surveys	2,112
Other miscellaneous items including pay of watchers	13,831
Total ...	42,251

Income from main sources—By Forest Department—

	RS.
Timber	15,630
Firewood	51,004
Bamboos	91,143
Grazing	17,784
Minor forest produce	36,968
Miscellaneous revenue	15,476
	2,28,005
Deduct refunds	2,481
Net Total ...	2,25,524

By Revenue Department—

Timber	7,217
Firewood	1,445
Minor forest produce	23,644
Total ...	32,306

The chief work done in the forest district.—Supply through coupe contractors 4,000 tons of mangrove fuel to Cocanada town and port and other towns of the delta.

Supply through coupe contractors of small timber, fuel and bamboos to Rajahmundry, Peddapur, Samalkot and other places in Rajahmundry and Peddapur taluks from a number of reserved forests in the plains and detached hills of these taluks. Rampa produce good deal of timber and bamboos and minor forest products which are extracted and collected by hillmen and removed by purchasers from whom seigniorage is collected.

Rampa bamboos find their way to all parts of the delta to Kistna and even to Guntur. Chief among the minor products from Rampa is tamarind. This is exported to Guntur and Kistna districts also. There are two teak felling series in Polavaram range which supply Ellore and other markets, viz., Rajahmundry. Introduction of sandal to a small extent and of teak on a larger scale in Tirumalayapalem, Sudikonda and Mallavaram reserves of Gokavaram range and in Ammayagoppu valley of Peddapur range.

GUNTUR.

Description.—The division includes the whole of the Guntur and Kistna Revenue districts. There is a belt of mangrove swamp forests along the coast partly in the Guntur and partly in the Kistna districts.

It supplies good quality fuel which is taken to towns like Bezwada, Tenali and Masulipatam and also to big villages in the delta taluks of Tenali, Repalle and Divi. Part of this fuel is utilized by factories (mainly brick factories).

The reserved forests in the west and north-west of Guntur district are mostly on low hills and are worked for the supply of a little small timber, but mainly fuel and grazing to the local population. These forests extending for miles along the Kistna river are of great climatic importance.

The Kondapalli reserve (in Kistna Revenue district) is also worked for small timber, fuel and bamboos, and supplies the requirements of Bezwada.

Area.—Reserved forests, 904 square miles, 612 square miles under Forest Department and 292 square miles under panchayat management.

How the forest division is split up into subordinate administrative charges.—The whole division is divided into four ranges consisting of 55 beats and 16 foresters for sections, etc.

Cost of administration—

	RS.
District Forest Officer	10,925
Forest rangers	8,505
Subordinate staff	20,174
Clerical and menial staff	11,669
Miscellaneous including contingencies	4,423
Total	55,696

Cost under important heads—

52. A. Capital—Sowing and planting	1,583
52. A. Capital—Road—Repairs	1,895
52. A. Capital—Buildings—Original works	185
52. A. Capital—Buildings—Repairs	881
Stores	240
Regeneration	165
Other miscellaneous items including pay of watchers	14,969
Total	19,918

Income from main sources—By Forest Department—

	RS.
Timber	666
Firewood	55,448
Bamboos	6,913
Grazing	47,523
Minor forest produce	5,331
Miscellaneous revenue	14,533
	1,30,414
Deduct refunds	—41
Net Total	1,30,455

By Revenue Department—

Timber	1,828
Firewood	8,887
Minor forest produce	15,923
Total	26,638

The chief work done in the forest district.—A large number of fuel coupes are worked through contractors. But a good deal of the activity of the staff has to be devoted to the protection of the forests from illicit fellings of small timber, fuel and yepi leaves for fodder and also in preventing illicit grazing. On account of extreme pressure for grazing, a large area of the reserves has to be closed to sheep grazing in order to give a chance to cattle. As in the upland taluks there are vast herds of sheep maintained by professional breeders (Gollas), it is a matter of great difficulty to prevent illicit grazing of sheep in areas closed to this animal.

NELLORE.

Description.—This division may be divided into three distinct regions.

(1) The ranges of Udayagiri and Rapur in which the forests lie on the hills which form the district boundary and the small ridges

running out from these hills, (2) Sriharikota Island, and (3) the forests of Sathiavedu range. Of these three regions the first two lie in Nellore district and the last in Chingleput district.

Of these three, the forests in Sriharikota Island are by far the most important. The area of the reserved forest is 25,317 acres lying between the Bay of Bengal and Pulicat lake. The soil is of pure sand mixed with humus in the wooded areas, and along the banks of Buckingham canal it is alluvium. The reserved forest consists of a crop of evergreen scrub species of varying density. Along the sea coast, there is no growth at all. As one comes westwards towards the island, the growth improves and towards the western boundary it becomes less dense. The best density will give an outturn of 25 tons per acre. There are seven fuel working circles under working, the total annual area under felling being about 1,250 acres.

Along the belt of pure sand on the sea coast, casuarina is being raised. In 1929-30 the first plantation of 50 acres was established. In 1930-31 the second plantation of the same area was put in. Minor forest produce is collected by Yanadis who are under Government control.

Transport from the fuel coupes to the Buckingham canal is by 2 feet gauge light tramway as carting is impossible in the sand. From the canal bank to Madras the produce is boated at about Rs. 3-8-0 per ton.

From its advantageous position on the Buckingham canal, this forest has been worked for fuel from a very long period and its produce makes a very definite contribution to the fuel supply of Madras.

Sathiavedu range.—There are seven separate blocks of forests which go to make up this range containing no less than 24 fuel felling series, in 19 of which, annual coupes are under working. The remaining five series, situated in Allikulli reserved forest cannot at present be economically worked.

Some of the produce from this range supplies large towns and villages in Ponneri and Tiruvallur taluks and some is taken to Madras via Tada the Pulicat lake, and the Buckingham canal:

The two ranges of Udayagiri and Rapur have their forests in the Veligonda and Yerragonda hills. The latter are merely the foot-hills of the former. The forests on these hills are of protective value but cannot at present be worked as the lead to the nearest railway station is about 40 miles.

The plain portions along the foot of the hills is divided into a large number of grazing units called kanchas. These kanchas are of varying areas and the grazing is limited to 2 acres per cow unit.

Area.—The total area of the Forest division is 744 square miles which is divided into 4 ranges, 8 sections and 29 beats.

Cost of administration—

	RS.
District Forest Officer	12,739
Establishment (including rangers, protective and clerical staff)—Pay and allowances	32,556
Miscellaneous including contingencies	4,623
Total	49,918

Cost under other important heads—

Minor forest produce	8,884
Roads—Original works	100
Do. Repairs	1,297
Feed and keep of livestock	38
Buildings—Original works	219
Do. Repairs	2,521
Regeneration	67
Fire-protection	300
Demarcation	255
Sowing and planting	1,709
Other miscellaneous items including pay of watchers	9,174
Total	24,564

Income from main sources—By Forest Department—

Timber	12
Firewood	77,845
Grazing	21,739
Other minor produce	13,120
Miscellaneous revenue	10,938
	1,23,654
Deduct refunds	752
Net Total	1,22,902

By Revenue Department—

	RS.
Timber	1,733
Firewood	1,666
Minor forest produce	6,297
Total ...	<u>9,696</u>

Sriharikota is by far the most important range in the division. Its fuel revenue is about Rs. 65,000 per annum. The other activities are the departmental collection of minor forest produce and the raising of casuarina.

WALTAIR,
26th August 1931.

G. C. ROBINSON,
Acting Conservator of Forests, First Circle.

ANNUAL ADMINISTRATION REPORT OF THE FOREST DEPARTMENT

FOR THE
YEAR ENDING 31st MARCH 1931.

SECOND CIRCLE

CHAPTER I.—CONSTITUTION OF STATE FORESTS.

(i) ALTERATION IN AREA.

1. *Reserved forests*.—The total area of reserved forests increased from 5,838 square miles to 5,914 square miles. The increase is due to the transfer from First Circle of the whole of Kanigiri range of *Nellore* division to *Kurnool South* division of this Circle from 1st April 1930 and to adopting resettlement figures for the area of certain reserves in the Kudligi taluk of *Bellary* district. The reconciliation of area figures in Hospet taluk alone is still under correspondence.

2. *Reserved lands*.—An area of 33 square miles was declared 'reserved lands' by the Collectors of *Anantapur*, *Cuddapah* and *Kurnool* under section 26 of the Forest Act and was placed under panchayat management.

(ii) FOREST SETTLEMENT.

3. Nil.

(iii) DEMARCATION.

4. The reclearance of boundaries was as usual done by the subordinates free of cost over a distance of 2,879 miles.

A distance of 783½ miles was cleared at a cost of Rs. 479 in the divisions noted below:—

	RS.
Kurnool East (52 miles)	167
Kurnool South (13 miles)	84
Kurnool West (709 miles)	179
Cuddapah North (7 miles)	29
Cuddapah South (2½ miles)	20

(iv) FOREST SURVEYS.

(a) *By the Survey of India Party.*

5. Nil.

(b) *By the Madras Survey Party.*

Nil.

(c) *Local Surveys.*

The survey of coupes was as usual done departmentally. Reference maps were maintained in all the divisions.

CHAPTER II.—MANAGEMENT OF STATE FORESTS.

(i) REGULATION OF MANAGEMENT.

Preparation and control of working plans.

(a) PREPARATION.

6. The total area under departmental control is 4,464 square miles. Working plans existed for 2,681 square miles; a plan for 262 square miles comprising the whole of Giddalore range and portion of Gundlakamma range of *Kurnool South*, was sanctioned in Chief Conservator's Proceedings No. 306, Press, dated 4th June 1930. Working plans for *Kurnool West* (854 square miles) and *Cuddapah South* (558 square miles) have been prepared. The former is pending sanction while the latter is pending submission to the Chief Conservator. A working scheme sanctioned by the Conservator is in force for 9 square miles in *Kurnool South* division. The remaining 100 square miles (51 square miles of panchayat reserves resumed in *Kurnool East* and 43 square miles of Kanigiri range transferred to *Kurnool South* division, and 6 square miles of Chennulapalle reserve in *Cuddapah North*) is not covered by any working plan at present. Proposals are under consideration either for including them with existing sanctioned plans or for preparing separate ones.

(b) Control.

7. Working plan prescriptions were followed with very few exceptions. Ten new fuel series opened in *Cuddapah North* division as mentioned in the previous year's report were worked during the year and addendum to the working plan will be sent up.

(ii) COMMUNICATIONS AND BUILDINGS

(a) *Roads and Bridges.*

8. *New works.*—The expenditure on 'New works' was Rupees 9,137 against Rs. 3,517 of the previous year. The most important work completed in the year is the Sudem-Adutla road in *Kurnool West* division commenced in the year 1929-30. The total length of it is 8 miles 4 furlongs and 5 chains and the cost was Rs. 9,960. The original alignment for this road was made in 1927.

Construction started on 17th October 1929 from Adutla under the personal supervision of the Conservator and some minor alterations in the first mile of the trace were made.

An estimate of cost was prepared in October 1929 for Rs. 10,000 providing for a 12-foot road on 8-foot cutting over a length of 8 miles and 5 furlongs.

Later, a deviation to take the road along the Sudem valley was ordered and was approved by the Conservator, on 13th December 1929. Revision of the estimate followed because the new alignment was longer by 19 chains and at this time it was ordered that the road be made 16 feet wide on 8 feet cutting.

A camp at Lingamayyapenta (third mile) housed the workmen in November-December 1929. Water failed by the end of December 1929 and work there had to be given up. Sura Sudem (seventh mile) then was the only source of water and work was commenced there in January 1930.

During 1929-30 Rs. 2,881 was spent on four miles of road.

The work made no head-way till August 1930. It was then pushed through and by the 10th December 1930, the whole length was completed except for some blasting and drains. A motor car ran from Velgode to Gundlabrahmeswaram on 10th December 1930 and two cars and two buses passed on 21st December 1930.

During 1930 the staff and road coolies suffered severely from malaria. Forester L. Joseph died on 26th November 1930 and eight foresters on the road-work went on leave. Four coolies died (in one instance the Collector of *Kurnool* defrayed the expenses of disposal of the body). There was great difficulty for staff and coolies in this dreaded locality also with drought and excessive rain. The final result reflects credit on Mr. D. L. Sathe, District Forest Officer, Ranger B. H. Anandathirtha Rao and Forester B. Venkata Rao, M.R.H.

In *Cuddapah North* division a bridlepath of 4 miles 2 furlongs to connect Chinnaletipattibhavi in the Nallamalais of Vonipenta range with Jothi in Porumamilla range was constructed during the year.

A new road three-fourths mile long in *North Cuddapah* division, to connect Korthimadugu in *South Cuddapah* division with the Kanamalopalli-Chintharajupalli forest road near Dasarladoddi, was constructed during the year, at a cost of Rs. 1,344.

In *Cuddapah South* division new works were undertaken at a cost of Rs. 715 as shown below:—

	RS.
1. Formation of Korthimadugu-Dasarladoddi road in the limits of Cuddapah range (distance 2 miles, 3 furlongs, 4 chains)	581
2. Realignment of the Kootalamarri-Salivendla bridle-path	11
3. Realignment of the Kootalamarri-Chintalachilaka bridle-path	10
4. Rebuilding the fallen revetment wall on Bala-palli-Papanasanam road in the seventh furlong of the fourteenth mile	113
	715

9. *Maintenance*.—The total length of all roads, cart-tracks and bridle-paths in the whole Circle was 918 miles 5 furlongs constructed at a capital cost of Rs. 2,25,644, of which 236 miles were repaired during the year at a cost of Rs. 3,010, against Rs. 4,770 of the previous year. The increased expenditure was in *Kurnool East* and *Cuddapah South* divisions—in the former extensive repairs were done to the Dornal-Peddachama ghaut road and Mantralakanama ghaut road; in the latter some of the roads in the Seshachalam Hills, reported to be in a very bad condition in last year's report, were repaired to the extent of the funds available.

10. The District Forest Officers have certified that all the important roads are maintained in a fair state of repairs. Sufficient funds were not available for maintaining all roads.

(b) Buildings.

11. The expenditure on new works and improvements was Rs. 10,684 and that on repairs (including pay of watchers) was Rs. 9,602 against Rs. 15,006 and Rs. 8,239 respectively of the previous year

12. The chief new works including improvements were:—

<i>Anantapur.</i>	RS.
Improvements to the combined Ranger's quarters and office at Madanapalle	507
Additional compensation awarded by the Sub-Court, Chittoor, for the building and site acquired last year for the above	1,699
	2,206

The old Range office at Madanapalle which had a book value Rs. 3,068 was sold by auction for Rs. 6,020.

<i>Kurnool East.</i>	
Completion of the combined Range office and quarters with out-houses at Ganjivaripalli	525
Completion of the range clerk's quarters at Ganjivaripalli	282
Completion of quarters for two forest guards and one peon at Ganjivaripalli	663
Construction of an inspection shed at Mogulutla with out-houses	520
Construction of a latrine at Dornal for the old Dornal Range office building	26
	2,016

<i>Kurnool South.</i>	
Improvements to the rest house at Isukagundam	1,400
Fencing the Range office compound at Sirvel	47

<i>Kurnool West.</i>	
Improvements to District Forest Officer's residence at Kurnool	117

<i>Cuddapah North.</i>	
Construction of Range quarters at Vontimitta	2,610
Tiling Chinnaletipattibhavi rest-house	320
Providing air-valve to the pipe system in District Forest Officer's residence	61
Construction of a latrine at Kondur	21
Construction of platform for building a rest-house at Kanamalopalli	166
	3,178

Cuddapah South.

	RS.
Completion of Rajampet Ranger's quarters ...	1,449
Construction of a compound wall to the Ranger's quarters at Rajampet ...	238
Construction of a latrine to Guvvalacheruvu rest-house ...	25
Land acquisition for Forest Guard's shed at Rajakunta ...	2
Registration of land sale-deed for Kodur tanah ...	6
	<u>1,720</u>

13. There were 383 buildings valued at Rs. 5,26,577 on the books at the end of the year; of these 202 buildings were repaired at a cost of Rs. 6,122 against Rs. 4,730 last year. The increase is due to the transfer of Kanigiri range from First Circle during the year and to repair of a larger number of buildings in *Cuddapah South* division following damage by unusually heavy rains.

14. The District Forest Officers have certified that all buildings have been kept in a fairly satisfactory state of repairs, during the year.

(c) Miscellaneous.

15. The expenditure of Rs. 555 on new works represents the sums spent on the following works:—

	RS.
<i>Kurnool East.</i>	
Deepening the well at Rollapenta ...	10
Constructing a water trough near Chinnamantrala.	45
<i>Kurnool West.</i>	
Improvements to the well in the Range compound of Sivapuram range at Atmakur ...	55
<i>Cuddapah North.</i>	
Construction of a well at Kondagorlapenta ...	407
Putting up a fence to the tube-well at Chinnaletipatibhavi ...	38

16. There were 143 wells representing capital expenditure of Rs. 33,422 at the close of the year.

Twelve wells were repaired at a cost of Rs. 112 against 24 wells at a cost of Rs. 458 in the previous year.

(iii) PROTECTION OF FORESTS.

(a) General Protection.

17. The total number of offences reported during the year (both reserves and unreserves) was 3,742 against 3,867 of the previous year. The difference of 125 is not appreciable. It pertained to reserves and all divisions contributed except the two *Cuddapahs*. The statement below compares the offences reported during the year with the previous year:—

	By Forest officers.		By Revenue officers.		Total.	
	1929-30.	1930-31.	1929-30.	1930-31.	1929-30.	1930-31.
1. Injury to forests by fire.	128	81	6	7	134	88
2. Unauthorized felling.	1,908	1,719	860	860	2,768	2,579
3. Unauthorized grazing.	667	829	..	6	667	835
4. Other offences ..	256	180	42	60	298	240
Total ..	2,959	2,809	908	933	3,867	3,742

18. *Offences relating to reserves dealt with by Forest officers.*—There was decrease under all items except 'Grazing.' The decrease under 'Injury to forests by fire' was principally in *Anantapur*. The District Forest Officer explains that fire statistics have not been given the requisite attention by Range Officers and so the figures furnished by them, are not accurate.

The decrease under 'Unauthorized felling' was mainly in *Kurnool East* and *West*. It is attributed to the opening of a number of fuel coupes to meet local demand in *Kurnool East* and to better protection in *Kurnool West*.

The decrease under 'Other offences' was chiefly in *Anantapur* and has not been explained.

There was an increase under 'Unauthorized grazing' in all divisions except *Kurnool South*. This is attributed partly to the absence of rain in May and June 1930 in *Kurnool East* so that many ryots put off purchasing grazing permits at the beginning of the grazing season and partly to special patrol parties and surprise inspections by Range Officers.

19. *Sandalwood cases.*—Two cases were detected in Hospet range of *Anantapur* division. In one case, six men were removing illicitly by night 1,230 lbs. of sandalwood from Bandri reserve. The forest guard and watcher of the beat tried to seize the wood in the reserve but the leader of the gang threatened them with a

revolver. The subordinates withdrew and informed Ranger K. Raghuraman who seized the sandalwood when it was about to be booked by rail to Bombay. All the six accused were prosecuted and convicted. One important accused, a Muhammadan municipal councillor who is a habitual sandalwood smuggler, was sentenced to three months' rigorous imprisonment, and a fine of Rs. 100. The remaining five accused were fined in all Rs. 75. The sandalwood was confiscated to Government.

In another case 337 lbs. of sandalwood was stolen from Gunda reserve of Hospet range by a habitual smuggler. It was booked to Wadi Bandar (Bombay), but was seized at Hospet railway station. The accused died before the trial and is said to have been murdered by a rival gang. The sandalwood was confiscated.

Liberal rewards were granted to all concerned in these two cases including the police inspector and the assistant stationmaster.

20. *Offences during the civil disobedience movement.*—There were four cases in Balapalle range of Cuddapah South division. All the accused numbering 15 were convicted. The matter was handled promptly by the District Forest Officer and his staff. Rewards were given to Rangers S. Sankaran and T. Paramasivam Pillai and to some sixteen others, for good work in this connexion.

21. *Offences relating to unreserves dealt with by Revenue officers.*—These exclude offences relating to reserves under panchayat management. The increase of 25 cases calls for no remark.

22. *Cases relating to reserves brought to trial.*—

Year.	Number.	Conviction.	Acquittals.	Percentage of acquittals.
1929-30 ...	862	282	466	54.0
1930-31 ...	1,143	429	501	43.8

Out of 501 cases shown under acquittals 479 cases were settled by the payment of compounding fees in court.

23. *Cases relating to unreserves brought to trial.*—

Year.	Number.	Conviction.	Acquittals.	Percentage of acquittals.
1929-30 ...	175	42	117	66.8
1930-31 ...	221	49	161	72.7

The increase in the number of acquittals is due to the payment of compounding fees in the court in respect of 145 cases out of 161 cases acquitted.

24. The percentage of offences enquired into by the District Forest Officers and Range Officers personally is given below:—

Division.	District Forest Officer's percentage.	Range Officer's percentage.
Anantapur ...	0.5	4.5
Kurnool East ...	0.9	15.0
Kurnool South ...	4.3	31.3
Kurnool West ...	1.0	9.5
Cuddapah North ...	1.1	11.7
Cuddapah South ...	0.7	17.3

25. The amount of compounding fees realized in 2,822 cases compounded during the year was Rs. 39,667 against Rs. 46,303 in 2,935 cases of the previous year. This works out to an average of Rs. 14-0-10 per case against Rs. 15-12-1 in the previous year. The instructions issued in G.O. No. 990, Revenue, dated 13th June 1910, were followed in fixing the compounding fees.

26. *Patrol system.*—The system of ' Surprise ' patrols by Range Officers and the subordinates of neighbouring beats continued during the year with very satisfactory results in all the divisions as shown below:—

	Number of cases detected.	
	1929-30	1930-31
Anantapur ...	3	65
Kurnool East ...	15	70
Kurnool South ...	102	249
Kurnool West ...	50	103
Cuddapah North ...	33	91
Cuddapah South ...	28	136
	231	714

27. *Rewards.*—In Anantapur Rs. 470 was disbursed during the year. The recipients were the Prosecuting Sub-Inspector of Police, Hospet (Rs. 50), Assistant Stationmaster (Rs. 50), Hospet Ranger (Rs. 300), one forest guard (Rs. 40) and one watcher (Rs. 30) for good work in the two sandalwood cases referred to in paragraph 19 supra.

In Cuddapah South division rewards were granted to two Range Officers (Kodur and Balapalle) their subordinates and two outsiders in four cases of civil disobedience in Balapalle range to the extent of Rs. 199-8-0.

(b) *Protection from Fire.*

28. The areas attempted to be protected in the fire season of 1930 and those actually protected are shown in Form No. 31, the number and origin of fires being given in Appendix A.

29. *Special protection*.—The area under special protection was 104 square miles against 96 square miles of the previous year and the cost of protection was Rs. 206 against Rs. 229 in the previous year. The increase in area was in *Cuddapah South* division. An area of 84 square miles was successfully protected during the year against 83 square miles in the previous year, the percentage of success being 80.4 against 86.1 in the previous year.

30. *Early-burning*.—Early-burning was done in all the divisions. The total area dealt with during the year was 594 square miles against 442 square miles last year. The average cost of the work was Rs. 4-6-1 per square mile against Rs. 7-9-11 last year.

There was an increase in the area early-burnt in all divisions except *Kurnool West* and *Cuddapah North*. This was partly due to the addition of Kanigiri range and partly to the transfers of large areas, from general protection.

The total area burnt by late incendiary fires in the early-burnt portions was about 10 square miles during the year or 1.1 per cent of the area dealt with. In *Anantapur* and *Kurnool South* divisions it is reported that the number and extent of fires furnished by the Range Officers were not accurate.

31. *General protection*.—The area under general protection was 3,780 square miles against 3,844 square miles in the previous year. The decrease was in *Kurnool South* and *Cuddapah South* divisions due to the transfer of large areas under 'Early-burning.' The area successfully protected during the year was 3,650 square miles against 3,606 square miles in the previous year, the percentage of success being 96.5 against 93.8.

The only remaining silvicultural experimental plot at Isukagundam in *Kurnool South* (Mr. Kesava Vittal's clear-felling of timber-cum-bamboo forest following by burn and re-sowing) was fire traced. In *Kurnool West* division all the experimental plots in the Gundlabrahmeswaram plateau and the new 5-acre plot was also fire traced.

The question of fire-protection in the two *Cuddapahs* referred to in the previous year's report remains to be solved. The area burnt during the year was larger in *Cuddapah South*. This is attributed to the grass-cutters and men who illicitly graze cattle in the coupes with or without the connivance of the beat guard. They set fire to the grass in the coupes to get fresh grass immediately after the first soaking rain. Some fires are due to jealousy between coupe contractors. In one case of malicious firing in *Cuddapah South* the accused was apprehended and a compounding fee of Rs. 10 was levied and collected from the accused. The circumstances have not been reported but the penalty appears

grossly inadequate as the proper course in such cases is to put the accused up before a first-class Magistrate and press for a sentence of two years' imprisonment with fine. The District Forest Officer, *Cuddapah South*, has not explained why he did nothing to close to grazing the areas which were burned, despite the fact that the total area burnt in his division during the year was 23,876 acres against 17,654 acres last year, although this point was emphasized by the Chief Conservator while reviewing the last year's report.

(c) *Protection against Cattle.*

32. Out of 4,469 square miles of reserves under departmental control, 4,250 square miles were opened to grazing of all animals except goats for the whole year, and 39 square miles were opened for part of a year against 4,207 square miles and 15 square miles respectively of previous year. The area closed to grazing for the whole year was 178 square miles and part of the year 2 square miles against 166 square miles and 2 square miles respectively of the previous year. The difference in the areas opened and closed to grazing as compared with the previous year was mainly in three *Kurnools*—in *Kurnool East* due to resumption of panchayat areas in *Kurnool South*, due to transfer of Kanigiri range from First Circle, and in *Kurnool West*, due to the new working plan.

33. Grazing permits were issued on payment to 395,337 animals against 442,276 in the previous year. All divisions except *Kurnool South* and *Cuddapah North* contributed to the decrease which is explained as due to a less number of foreign cattle coming to the hills.

34. The incidents of grazing as reported by the District Forest Officers was:—

		Acres per cow unit.	
		1929-30.	1930-31.
Anantapur ...	...	4.44	5.6
Kurnool East ...	...	10.2	12.0
Kurnool South ...	...	10.5	11.9
Kurnool West ...	...	7.1	7.8
Cuddapah North ...	...	8.8	8.5
Cuddapah South ...	...	11.4	10.5

35. The number of cattle impounded during the year was 28,350 against 28,484 of the previous year.

36. During the year the Kanigiri villagers represented to the Collector of Nellore their difficulties arising out of the kancha system of grazing management. They asked that it be abolished in

favour of permits. The Conservator made a special tour in Kani-giri range and recommended the permit system of grazing. The Collector of Nellore agreed to this proposal as a temporary measure for the year 1930-31 only and so it was done, refunding the amounts realized in respect of three kanchas which had been sold.

(d) *Protection against injuries from natural causes.*

37. In *Anantapur* the eradication of lantana in the plateau beat of Horsleykonda reserve was continued free of cost by the guard and watcher.

In *Kurnool South*, the subordinates cut climbers on standards and seedlings in all worked coupes.

In *Cuddapah South* thorny creepers were cut by subordinates as far as practicable. In some of the coupes *Strobilanthes* was uprooted by the subordinates.

In *Kurnool East* there has been neglect of climber cutting for years past.

CHAPTER III.—SYLVICULTURE

SECTION I. AFFORESTATION AND REGENERATION.

(1) *General progress of areas under regeneration.*

38. These areas comprise—

- (a) felled coupes,
- (b) sandal propagation plots, and
- (c) stump planting of teak in *Kurnool West*.

39. The year 1931 was a bad seed year in *West Kurnool* division for teak, *Pterocarpus marsupium*, *Terminalia tomentosa* and rosewood and seed had to be obtained from elsewhere for 1931 sowings. Coppice regeneration was generally good. In the stony arid and over-grazed forests of *Anantapur* seedlings are scarce and such as persist are cut back by browsing and fires. The District Forest Officer says it is too soon to comment on the result of *rab* sowings but in *Cuddapah North* and *Kurnool East* some promising *rab* sown seedlings have been seen by the Conservator. The need is felt for after-care of the seedlings. It may be said that *Anantapur* is ahead of other divisions in sandal propagation work, the results being very promising. The established sandalwood in all divisions has made progress.

(ii) *Establishment of Reproduction under Working Plans or Schemes.*

(a) *Mainly natural.*

40. Reproduction by coppice shoots continued fairly satisfactory. Natural reproduction by seed in felled coupes was unequal in different localities as usual. The system of cutting back advance growth of good species in combination with early-burning in order to expedite the growth of these natural seedlings is being pursued in all divisions.

(b) *Mainly artificial.*

41. *Measures for improvement of the stocking of good species.*—The measures include *rab* sowings (burning of felling debris in heaps or lines and sowing seeds, in the ash). These were started in 1928-29 in some divisions and in 1929-30 in the remainder. The original intention was to have all *rab* sowings done free of cost by the beat staff. After two years' experience it was found impossible to get it done free in all the 'timber' and 'fuel' coupes throughout the Circle and the Conservator ordered in January 1931 that District Forest Officers should personally supervise the work, under sanctioned estimate, in selected areas, in order to arrive at costs. In all remaining coupes *rab* sowings were to be done free by the beat staff to the extent possible.

(c) *Afforestation.*

42. *Measures to form sandalwood propagation plots.*—The work of forming these plots of one acre or a half acre each year in each beat continued. Some divisions have several years results to show: in others the work is newer. Valuable results are gradually being obtained. The three divisions of *Kurnool* are backward. The technique of these sandal sowings is now well understood.

(iii) *Plantations and other forms of Regeneration not under Working Plans or Schemes.*

43. The interesting plantations at Kupgal and Moka were seen by the Chief Conservator during the year. The former is now mainly *Hardwickia* and the latter *Dalbergia sissoo*. The small Kodur Red Sanders plantation, about 40 acres, started in 1865, cost approximately Rs. 2,100, and has furnished about Rs. 19,500 in revenue. Sandalwood is spreading in it. Mr. Wood's *Kurnool* Teak plantations, made in order to provide regular work for Chenchus and never regarded as a 'commercial' undertaking, cost some Rs. 3,25,000, and have produced about Rs. 31,000 in revenue. The growth in different localities is unequal, but some of the plantations are thriving. No regular plantations are being made now, nor for many years past in this Circle.

(iv) *Tending.*

44. *Anantapur.*—Lantana was uprooted over about 20 acres of Lantana Block II in Horsleykonda reserve free of cost by the beat staff. Tending of sandal plots and climber-cutting in sandal coupes were also done free of cost.

Kurnool East.—Nil.

Kurnool South.—Creepers were cut by subordinates from standards and coppice shoots in worked coupes.

Kurnool West.—The old teak plantations and 5-acre experimental plots were maintained at a cost of Rs. 175.

Cuddapah North and South.—Tending was done free in the felled improvement coupes as usual by the beat staff.

(v) *General.*

45. The teak trees at Kangamadugu, the mahogany at Kodur, Mogilipenta, Kangamadugu and the Eucalyptus at Mogilipenta planted years ago as an experiment on a very small scale are reported to be thriving. The small mahogany and *Acrocarpus* plantations at Horsleykonda were thinned during the year.

CHAPTER IV.—EXPLOITATION.

(a) SYSTEM OF MANAGEMENT.

(i) *Major Forest Produce.*

46. Sylvicultural systems in force were—

- (i) Clear-felling followed by artificial regeneration.
- (ii) Simple coppice.
- (iii) Coppice with standards.
- (iv) Improvement fellings.
- (v) Selection fellings.
- (vi) Improvement cum clear-felling.

47. (i) *Clear-felling followed by artificial regeneration under the high forest system.*—This was confined to two coupes of 15 acres each, one in the High Forest Working Circle at Gundlabrahmeswaram and the other in Nandiya range. These coupes were clear-felled and have since been sown.

(ii) *Simple coppice.*—In fuel coupes an area of 606 acres in *Anantapur*, 560 acres in *Kurnool East*, 938 acres in *Kurnool South*, 2,343 acres in *Cuddapah North* and 2,507 acres in *Cuddapah South* were exploited during the year.

(iii) *Coppice with standards.*—The areas dealt with under this system were 18 acres of Moka plantation (*Sissoo*) in *Anantapur*, the Pole forests of Gundlakamma and Giddalore ranges (464 acres) in *Kurnool South*; 1,636 acres in *Kurnool West*, and 142 acres in *Cuddapah North*.

(iv) *Improvement fellings.*—In *Anantapur* an area of 302 acres was worked under this system in Ganganapalle and Vempalle ranges coupled with artificial regeneration. In *Cuddapah North* and *South* the areas dealt with were 1,757 and 3,073 acres respectively. Of the above 3,073 acres, 2,724 acres represent the area of Red Sanders forests of *South Cuddapah* division which were worked under this system.

(v) *Selection fellings.*—*Anantapur* division. The palmyra forest at Idupulapaya is worked under this system but owing to accumulation of unsold stock with the contractors no fellings were done during the year. An area of 314 acres was worked in the Pole Forest Working Circle, in which the stumps have to be trimmed for the production of coppice shoots.

Kurnool East—Selection Working Circle on a 10-year felling cycle.—Three coupes measuring 3,189 acres in extent of Ganjivaripalle range were exploited under this head. The one coupe in Turimella range was not worked for want of demand. In this working circle *Hardwickia binata* (yepi) trees of over 42 inches in girth were extracted for agricultural implements and building materials as well as trees of other species.

In Dornal and Turimella ranges softwood trees of 42 inches girth and above were marked for exploitation. The coupe in Dornal range was not worked for want of demand and the contractor of the coupe of Turimella range felled a few trees only in the coupe, and did not remove anything.

Seven thousand six hundred and forty cubic feet of softwood was removed from Coupes 1 and 2 of Turimella range and 600 cubic feet of the timber from Coupe 2 of Dornal range which were worked in 1929–30.

Kurnool South.—Softwood (*Givotia rottleriformis*) was felled departmentally in Chelama and Sirvel ranges during the year and sold to the state-frame makers at Markapur, but owing to trade depression and incoming of supplies from Kallai and Trichur the demand for this timber was very poor during the year and further felling was suspended. There was no balance of felled timber at the close of the year. The Western India Match Factory was supplied with a sample of softwood logs, but owing to their strict specification they placed no order.

Cuddapah South division.—In four ranges mature inumaddi (*Terminalia tomentosa*) trees and thamba (*Shorea tumbuggaia*) trees of 48 inches and above in girth and red sanders of 28 inches and above in girth were extracted departmentally during the year. The timber was converted into posts of saleable sizes and in the case of red sanders trees found unsound for conversion into timber, the heartwood was converted into 'Doll wood' (for dolls, images, toys, etc.). In Balapalle range mature yegi (*Pterocarpus marsupium*) and jalari (*Shorea talura*) trees were cut for conversion into felloes. These fellings were confined to selected blocks in each range.

(vi) *Improvement cum clear-felling—Kurnool East.*—Two coupes of 72 acres in Dornal range and one coupe of 17 acres in Turimella range were offered. The former two were leased but the contractors did not work them for want of demand. The coupe of Turimella range was leased in 1929–30 but as the contractor failed to work it, it was worked departmentally in 1930–31.

In the above coupes all trees are felled except teak, *Terminalia tomentosa*, *Pterocarpus marsupium*, *Dalbergia latifolia*, *Terminalia chebula* and *Sapindus emarginata*. These are retained as seed-bearers for five years. The felling refuse is heaped in lines, pressed and burned, for *rab* sowings.

Cuddapah South.—A consolidated working plan for the whole South Cuddapah division was completed at the end of the year, in accordance with which the following timber and fuel coupes were worked in 1930–31.

Timber.—Two improvement felling series in Kodur and Chitvel ranges. The area of the two coupes was 135 acres.

A coupe of another series called Kutalamarri Miscellaneous Pole Series (56 acres in extent) was sold at Rs. 1–4–0 per acre. The contractor failed to work and the lease was cancelled.

Fuel.—The first coupe in fourteen new felling series in Kodur, Rajampet, Cuddapah, Chitvel and Sanipaya ranges and an arrear coupe of Balapalle range measuring in all 1,445 acres were put to auction. Of these, Coupe I (54 acres) in Sanipaya range remained unsold and three other coupes (166 acres) though sold were not worked.

48. In Dornal and Turimella ranges of Kurnool East division dead-wood operations, viz., extraction of rafters, spokes and felloes of *Pterocarpus marsupium* and beams of *Hardwickia binata*, *Terminalia tomentosa* and *Bassia latifolia* were carried out.

49. For the whole Circle the total output of timber was 333,000 cubic feet and of fuel 9,890,000 cubic feet from reserved forests.

(ii) *Minor forest produce (including bamboos and grazing).*

50. Three methods of working were in vogue—

- (1) departmental collection,
- (2) on lease, and
- (3) on permits.

51. *Leases.*—Bamboo coupes were leased in all divisions. The collection of minor forest produce was also effected through lessees. Tangedu bark (*Cassia auriculata*) was leased in all divisions for two years from 1st April 1930.

Rela bark (*Cassia fistula*) was sold on a rotation of five years in Ganjuvaripalle range of Kurnool East division and in Badvel range of Cuddapah North division in accordance with the working plan. There was no demand in other divisions. Nux vomica was leased for low sums where it was plentiful in Anantapur division, sold with other minor produce in Kurnool East, in two ranges in Cuddapah North and in one range only in Cuddapah South division. Two slab quarries were sold for the usual term of five years in Kurnool West division.

Tooki and platter leaves were sold in Anantapur, Kurnool East and Cuddapah South divisions. Tooki (*Diospyros*) leaves in Cuddapah North division fetched Rs. 2,237.

52. *Collection on permits.*—Permits were issued on seigniorage for removal of thorns, stones and gravel from reserves.

53. *Grass.*—Free removal of fodder and thatch grass from reserves in head-loads in all the divisions, and in cart-loads free, in the Cuddapah district only, was continued. A nominal fee of five annas per cart-load was levied for removal in cart-loads in Anantapur and three Kurnool divisions. In Kurnool South division alone Rs. 2,376 was realized by sale of 7,603 cart-loads of fodder and botha grass. Besides this, about 4,200 cart-loads of fodder and botha grass were removed by head-loads free. The concession of free removal of fodder grass was availed of to a greater extent in Cuddapah North and Kurnool South divisions.

54. *Manure leaves.*—Five hundred and ten cart-loads in North Cuddapah and 1,224 cart-loads in South Cuddapah were removed at Re. 1 per cart-load. Demand in Kurnool South and West divisions was not appreciable.

55. *Grazing*.—This was, as usual, controlled by permits, a single permit being valid for a whole range.

(b) AGENCY OF EXPLOITATION.

(i) *Departmental Agency*.

56. The outturn of major and minor produce by departmental agency is compared with that of the previous year in the following table :—

Year.	Timber in thousands of cubic feet.	Fuel in thousands of cubic feet.	Bamboos—Value.	Minor forest produce—Value.
1929-30	57	324	RS. 347	RS. 134
1930-31	45	189	233	127

Decrease under timber was chiefly in the three *Kurnools*. This is due mainly to restricted felling in *Kurnool East* division for want of demand.

Decrease under fuel was mainly in *Anantapur*, *Kurnool West* and *Cuddapah South* divisions. This is due to stoppage of charcoal manufacture in *Anantapur* division as it was unprofitable, and in *Kurnool West* division as the supply of charcoal to *Kurnool* municipality was given up and to less quantity of produce being confiscated in the coupes of *Cuddapah South* division on the expiry of leases.

Decrease under 'Bamboos' is due to the fact that in 1929-30 a quantity of bamboos worth Rs. 154 was extracted departmentally in *Kurnool West* division. Decrease under minor forest produce is due to the fact that in *West Kurnool* division the right of collection of minor produce was leased.

In *Anantapur* 3,691 lbs. of sandalwood were extracted and sent to *Vellore* for sale. The quantity sold was 1,672 lb. only and the sum realized was Rs. 661.

Similarly, 607 lbs. of sandalwood were sent to *Vellore* from *South Cuddapah* division; 279 lbs. were sold and the sum realized was Rs. 110.

The value of timber extracted departmentally was Rs. 23,483. Deducting the expenditure including overhead charges there was a profit of Rs. 7,601 which works out to As. 2-9 per cubic foot.

(ii) *By purchasers*.

57. The following statement shows the quantity of major produce and the value of minor produce removed by purchasers :—

Year.	Timber in thousands of cubic feet.	Fuel in thousands of cubic feet.	Bamboos.	Minor forest produce and grazing.
			Value.	Value.
1929-30	626	8,445	RS. 72,967	RS. 5,60,122
1930-31	426	9,792	68,702	3,88,123

The decrease under timber was mainly under 'Unreserved lands' of *Anantapur* division and in the reserves and unreserves of *Kurnool West* division.

In the former it was due to fewer removals of trees on darkhast lands; while in the latter division the quantity of produce extracted was less than in the previous year due to dullness of the market.

The increase under fuel was due to a large outturn from the reserves of *Cuddapah South* division consequent on the opening of thirteen new fuel felling series, and to the increased yield of *Nakkina*, etc., fuel in Block I of *Chitvel* range.

The decrease under bamboos was mainly in *Kurnool West* division and it was due to trade depression.

The large decrease under minor produce including grass and grazing is due to—

(1) very few 'foreign' cattle came,

(2) the general fall in prices of tangedu bark, and the absence of demand for rela bark, toomki leaves, etc., owing to the present trade depression.

(iii) & (iv) *By free grantees and right-holders and under privileges*.

58. The following table shows the quantity and value of the produce removed under this head :—

	Timber.		Fuel.		Bamboos.		Minor produce and grazing.	
	In thousands of cubic feet.		In thousands of cubic feet.		Value.		Value.	
	1929-30.	1930-31.	1929-30.	1930-31.	1929-30.	1930-31.	1929-30.	1930-31.
Free grantees	28	46	1	..	RS. 425	RS. 388	RS. 51	RS. 418
Right and privilege holders.	..	..	..	..	..	..	3,853	3,823

59. *Free grants.*—Free grants were made from reserves and unreserves in all divisions chiefly for rebuilding houses burnt by fire.

The increase under minor produce and grazing is due to free grants valued at Rs. 434 made in *Kurnool East* and *South* and *Cuddapah South* divisions during 1930-31 against Rs. 23 only in the previous year.

60. *Rights and privileges.*—The Chenchus in the three *Kurnools* continued to avail themselves of the concessions granted to them at the forest settlement, viz., free removal of timber for their huts, of minor forest produce for their own consumption and of free grazing in respect of their own cattle including goats. The orders of the Chief Conservator have lately been received on Mr. A. V. Sundaram's report referred to last year in respect of the numbers of cattle owned by the Chenchus and cognate subjects. The settlers at Chelama, Diguvaletta and Isukagundam continued to enjoy free grazing for their cattle under the terms of the licences issued to them for settling in reserved forests. The grazing concessions in the *North* and *South Cuddapah* divisions referred to in the previous year's report continued in force.

(c) OUTTURN AND SOURCES OF FOREST PRODUCE.

61. The total outturn from all agencies is compared in the following statement:—

Year.	Timber in thousands of cubic feet.	Fuel in thousands of cubic feet.	Bamboos, value.	Gross value of minor forest produce including grass and grazing.
1929-30	711	8,770	Rs. 73,741	Rs. 5,61,160
1930-31	517	9,972	Rs. 69,323	Rs. 3,92,524

Important variations have been explained above.

CHAPTER V.—FINANCIAL RESULTS.

62. The following figures show the financial position of the Circle as compared with that of the previous year:—

	1930-31. RS.	1929-30 RS.
<i>Receipts.</i>		
Revenue	(a) 7,80,832	(b) 10,22,554
Deduct—Refunds ...	1,090	2,419
Net revenue ...	7,79,742	10,20,135

(a) Includes Rs. 771 credited in Fourth Circle.

(b) Includes Rs. 978 do.

	1930-31 RS.	1929-30 RS.
<i>Expenditure.</i>		
Conservancy and maintenance	88,425	90,928
52-A. Capital outlay on forests	20,979	20,808
Establishments	440,240	4,23,847
Total ...	5,49,644	5,35,583

63. The following statement shows the financial position of each division during the year under report and a comparison of surplus or deficit with that of the previous year:—

Division.	1930-31.			1929-30.		
	Revenue.	Expenditure.	Surplus or deficit.	Revenue.	Expenditure.	Surplus or deficit.
Anantapur ..	Rs. 2,22,056	Rs. 73,691	+ 1,48,365	Rs. 3,97,040	Rs. 66,904	+ 3,30,136
Kurnool, East ..	53,402	68,633	— 14,631	61,204	76,202	— 14,998
Do. South ..	1,17,000	84,576	+ 32,424	1,38,053	87,202	+ 50,851
Do. West ..	1,45,025	1,06,399	+ 38,626	1,80,760	1,08,082	+ 72,678
Cuddapah, North ..	72,957	70,943	+ 2,014	85,498	75,159	+ 10,339
Do. South ..	1,69,232	83,550	+ 85,682	1,57,417	77,923	+ 79,494
Direction ..	70	62,452	— 62,382	163	44,111	— 43,948
Total ..	7,79,742	5,49,644	+ 2,30,098	10,20,135	5,35,583	+ 4,84,552

From the above statement it may be observed—

(a) *Kurnool East* division worked at a loss;

(b) all the other divisions were worked at a profit but that the amount of profit realized during the year under report was considerably reduced except in the case of *Cuddapah South* division where the profit realized was increased by Rs. 6,188; and

(c) the net loss in *Kurnool East* division in 1930-31 is less than in 1929-30 and it is due to a reduction in capital expenditure.

The large deficit under 'Direction' was due to the Circle being in charge of a senior Conservator and to payment of leave allowances to a Deputy Conservator (Mr. K. R. Venkataramana Ayyar) on leave.

64. The important variations between the actuals of 1930-31 and those of the previous year are explained below:—

RECEIPTS.

(a) *Timber and other produce removed by Government Agency.*

Timber (—Rs. 17,732).—The decrease is mainly in *Kurnool East* and *South* divisions and it is due to—

(1) want of demand for softwood in *Kurnool South* division due to slack trade and also to advent (via *Bezawada*) of such wood at low rates from *Nizam's Dominions*; and

(2) want of demand for other timbers on account of trade depression.

Fuel (—Rs. 4,727).—The decrease is due to discontinuance of the manufacture of charcoal in *Kurnool West* division as the supply of charcoal to the Municipality was given up.

(b) *Timber and other produce removed by consumers and purchasers.*

FOREST DEPARTMENT.

Timber (—Rs. 39,980).—The decrease is in all the divisions and it is due to—

(1) owing to general depression in trade coupes did not fetch as good prices in 1930-31 as in 1929-30; and

(2) apportionment of revenue of timber coupes to fuel as the contractors of *Cuddapah South* division converted most of the timber into fuel due to dullness of timber trade and greater demand for fuel in the *Madras* market.

Fuel (+Rs. 28,817).—The increase is in *Cuddapah South* division and it is due to the additional number of coupes opened and sold as per provisions of the consolidated working plan and due to greater demand for fuel in the *Madras* market which induced the contractors to convert even timber into fuel as stated under 'Timber' above.

Bamboos (—Rs. 4,500).—The decrease is due to market depression.

Grazing and fodder grass (—Rs. 21,641).—The decrease is in all the divisions except *Cuddapah North* and it is due to the fact that very few 'foreign cattle' came to graze in the forests of this Circle owing to good rains and consequent availability of grass

everywhere. Even the number of district cattle for which permits were purchased was less in 1930-31 as there was grass in un-reserves.

Minor forest produce (—Rs. 11,544).—The decrease is mainly due to the fall in prices of tangedu and rela barks. This is still more apparent under 'Revenue Department—Minor forest produce.'

REVENUE DEPARTMENT.

Timber (—Rs. 16,320)—*Fuel* (—Rs. 3,847).—These are fluctuating items and the revenue under these heads is collected by the Revenue Department. We do not control them. The fall of revenue may be attributed to financial stringency.

Minor forest produce (—Rs. 1,33,926).—Please see explanation against 'Forest Department—Minor forest produce' above.

Fines and forfeitures (+Rs. 832).—This is a fluctuating item. The increase is due to a heavier fines imposed on contractors for irregularities committed in coupes.

Other sources (—Rs. 16,984).—This is a fluctuating item and the decrease is mainly attributed to the following causes:—

(1) Due to crediting to the budget unit in 1929-30 sale-proceeds of certain forest buildings in *Kurnool West* and *Cuddapah South* divisions.

(2) Due to realization of a less amount of compounding fees than in the previous year.

(3) Due to fall in penning fees owing to the absence of foreign cattle.

EXPERIMENTS.

8-b *Conservancy and works—Forest produce removed by Government Agency.*

Timber (—Rs. 810).—The decrease is due to the stoppage of the departmental supply of softwood in *Kurnool South* division for want of demand and to leasing out of timber coupes in *Kurnool East* division instead of working them departmentally as in 1929-30.

Fuel (—Rs. 2,076).—The decrease is due to giving up charcoal operations in *Kurnool West* division and to not felling indicator areas in coupes of *North Cuddapah* division.

Timber and other produce removed by consumers and purchasers (—Rs. 1,565).—The decrease is due to—

(1) less commission paid to permit-issuing officers on account of fall in grazing revenue,

(2) reduction in rates for cutting coupe and strip lines,

(3) entertainment of more watchers on higher salary during the previous year 1929–30 in *Cuddapah South* division as against less number of watchers during the year under report, and

(4) to reduction in the rates allowed in *Cuddapah South* division for marking standards in the improvement felling coupes during the year.

Communication and buildings—Roads and bridges (+ Rupees 1,240).—The increase is due to special repairs done to some roads in *Kurnool East* and *Cuddapah South* divisions during the year under report for which additional allotments had to be given.

Buildings (+Rs. 1,363).—The increase is for repairs to buildings consequent on damage by heavy rains.

Rates and taxes (+Rs. 590).—The increase is due to debiting to this head Municipal taxes on buildings belonging to the Forest Department which were debited to 'Rates and taxes' under 'Contingencies' in the previous year.

Conservancy and Regeneration—Fire-protection (—Rupees 950).—The decrease is due to—

(1) savings in certain divisions by subordinates doing the work, in place of paid coolies; and

(2) debiting under 'Regeneration' the expenditure incurred in *Cuddapah North* division on 'Cutting back' of seedlings.

Other works (—Rs. 812).—The decrease is due to (1) repairs of certain tanks proving unnecessary and (2) reduced rates for 'tending' operations in *Cuddapah North* division.

Miscellaneous—Honoraria (+Rs. 450).—The increase is for payment of rewards for detection of sandalwood smuggling in *Anantapur* division and illicit browsing of goats and sheep in *Kurnool East* division.

52-A. Capital outlay on Forests—Communications and Buildings, Roads and Bridges—Works in progress (+Rs. 6,468).—The increase is on the *Sudem-Adutla* road in *Kurnool West* division.

New works (—Rs. 849).—The decrease is due to debiting under 'works in progress' a portion of the charges for construction of *Sudem-Adutla* road.

Buildings—Works in progress (+Rs. 1,200).—The increase is in *Anantapur* division and it is due to additional compensation paid for the acquisition of buildings for range quarters at *Madanapalle* and the sum spent for improvement to the range quarters.

New works (—Rs. 5,522).—The decrease is due to the postponement of several new works sanctioned for 1930–31 on account of the present financial stringency.

Other works—Works in progress (—Rs. 550).—The decrease is due to the savings effected in the construction of a well at *Kondagorlapenta* in *Cuddapah North* division, as work could not be done owing to the existence of water in the well.

New works (—Rs. 509).—The decrease is due to undertaking no new works in *Kurnool South* division during the year under report owing to the present financial stringency.

8-c (1) District Establishments—Pay of officers (non-voted) (+Rs. 23,782).—The increase is due to payment of leave allowance to a Deputy Conservator (Mr. K. R. Venkataramana Ayyar) on leave and to posting of two Imperial Officers in succession to *Anantapur* division.

Pay of officers (voted) (—Rs. 5,200).—The decrease is due to—

(1) posting of Imperial Officers during 1930–31 to *Anantapur* division;

(2) no Extra Assistant Conservator was attached to *Kurnool South* division during 1930–31; and

(3) posting of two Extra Assistant Conservators for six months and one for the remaining six months during 1929–30 in *Kurnool West* division against the posting of one Extra Assistant Conservator only for ten months during 1930–31 in the same division.

Pay of establishments (Permanent) (—Rs. 1,814).—The decrease is due to reduction of Foresters in *Kurnool East* division and to payment of leave allowance to the Accountant of the Direction office during 1929–30.

Pay of establishment (Temporary) (—Rs. 703).—The decrease is due to—

(1) abolition of a clerk on Rs. 30 in *Kurnool East* division; and

(2) no Vernacular Training School was held and there was no peon for the Extra Assistant Conservator attached to *Kurnool West* division for some months in the year.

Travelling allowance (voted) (—Rs. 2,905).—The decrease is due to not opening a Vernacular Training School and to very economical touring.

Fixed Travelling Allowance (+Rs. 613).—The increase was in Kurnool West division and it is due to the fact that a number of foresters were deputed for road-work in Nallamalais for which enhanced fixed travelling allowance had to be paid.

Other Compensatory (+Rs. 545).—The increase is due to the fact that unlike 1929-30 every Ranger kept a pony, and to the increased conveyance allowance due to the amalgamation of Kani-giri range with Kurnool South division.

Charges payable to Government departments and others (+Rs. 1,369).—The increase is due to payment to Public Works Department of arrear rents due from the Forest Department on account of Conservators' quarters at Bellary and the quarters for the District Forest Officer of South Cuddapah division.

65. The outstanding revenue at the close of the year amounted to Rs. 1,92,640 of which Rs. 34,277 fell due within the year against Rs. 18,463 only in the previous year. Of Rs. 34,277 referred to above Rs. 26,914 represented tangedu lease amounts, which owing to bad trade could not be realized by the due dates. Of the overdue amount (Rs. 34,277) Rs. 22,145 had been realized since the close of the year.

66. Of the revenue realized during the year under report 41 per cent was from major produce 50 per cent from minor produce and 9 per cent from other sources.

67. Of the expenditure under 8-b. Conservancy and works and 52-A. Capital Outlay on Forests, 55 per cent relates to exploitation, 44 per cent to improvement and upkeep of forests and 1 per cent to Miscellaneous items.

68. The estimated value of timber and other produce in the sale depots at the close of the year was Rs. 3,479 against Rs. 2,434 at the commencement of the year.

CHAPTER VI.—RESEARCH AND EXPERIMENTS.

RESEARCH.

69. Nil.

EXPERIMENTS.

70. Anantapur.—In Gunda reserve of Hospet range five 10-acre plots are being ploughed and sown with *Cassia auriculata* (tangedu) seed, at the rate of one plot each year from 1927-28

, 1931-32, so that in 1932 tangedu bark of known ages from one to five years will be available for tannage test. The result of sowings in the first three plots is poor: a few scattered patches, whose rate of growth appears to be very slow, have survived in each plot. In the fourth (1930-31) 10-acre plot, germination was said to be good, but the result is almost a complete failure. Rupees 19 was spent and the total cost up to date has been Rs. 55.

Cuddapah North.—The six half-acre sample plots opened during 1929-30 in Nallamalais, Palakondas and Lankamalais, to record height and girth of standards, saplings and coppice shoots were maintained. The next measurement is due in 1934.

Cuddapah South.—Sample plots opened in 1927 in each range except Sanipaya for quinquennial girth measurement of red sanders trees (50 seedlings and 50 coppice) were maintained. The next measurement is due in 1932.

Observations in the sample plots in selected improvement felling coupes on the flowering and seeding of red sanders were recorded in the registers. The Forest Research Officer, Ootacamund, has some experimental plots in this division, which he last measured in December 1929. Observations were recorded and sent to him half-yearly during 1930-31. An experiment by the District Forest Officer showed that more leaf and better quality leaf for *bidi* making is obtained by pollarding *Diospyros* (tookii) trees. No result was reached in an experiment on regenerating red sanders.

Kurnool district.—As stated in the last report all Mr. Kesava Vittal's experimental plots were abandoned except the *rab* sown plots. They were fire-protected, but an accidental fire occurred and the damaged seedlings were cut back. Periodical measurements were recorded in these plots.

The 5-acre experimental plot opened at Gundlabrahmeswaram (*Kurnool West* division) during 1929-30 was stump planted and sown with germinating seeds, followed by rigid fire-protection and weeding during the year at a cost of Rs. 119.

The Research Institute, Dehra Dun, called for specimens of *Terminalia tomentosa* varieties and the District Forest Officer, Kurnool West, has found two growing side by side in Guvvalakunta reserved forest. They were full grown trees, both in flower. One has dark green leaves with grey underside and the other a lighter green leaf with the underside distinctly brown. Specimens will be sent.

The *yepi* (*Hardwickia*) experimental plot at Chelama (*Kurnool South* division) continued to be maintained during the year.

71. *Experimental early-burning plots.*—These plots in red sanders forests in *Anantapur*, *Cuddapah North* and *Cuddapah South* designed to test the effect of early-burning under different conditions were maintained.

The four new plots opened during 1929–30 in *Cuddapah North* also continued to be maintained.

Definite conclusions have not yet been drawn.

CHAPTER VII.—ADMINISTRATION.

72. *M.R.Ry. Rao Sahib K. R. Venkataramana Ayyar* held charge of the Circle from 1st April to 14th April and *Mr. A. A. F. Minchin* during the rest of the year under report.

73. *Changes in territorial jurisdiction.*—The *Kanigiri* range of *Nellore* division was transferred from the First Circle and added to *Kurnool South* division with effect from 1st April 1930. On the same date a portion of *Giddalore* range of *Kurnool South* division (*West Veligondas*—part), etc., (59 square miles) was added to *Kanigiri* range for administrative purposes.

A portion of *Gundlakamma* range of *Kurnool South* division (*Cumbum* reserve—part) (8 square miles) was transferred to the *Turimella* range of *Kurnool East* division from 1st April 1930 for administrative convenience.

74. *Tours.*—The Chief Conservator visited the Circle in December 1930 and January 1931. He inspected *Madinikonda* and *Horsleykonda* reserves of *Madanapalle* range and *Moka*, *Kupgal*, *Banavasi*, *Adoni East* and *West* reserves of *Hospet* range of *Anantapur* forest division.

As a result of these inspections it was ordered to hand over *Banavasi* reserved forest to panchayat management, and *Madinikonda* was transferred from Class III to Class I and *Adoni East* and *West* are to be leased to the *Adoni* municipality for a period of 25 years from 1st July 1931.

The Conservator toured in all divisions except *Kurnool East* during the year and spent 205 days in camp.

Mr. Minchin wrote inspection notes on the forests of *Kurnool South*, *Anantapur* and *Cuddapah South* divisions during the year.

The Working Plans Conservator toured in *Kurnool West* and *Cuddapah South* divisions in connexion with new working plans.

All the District Forest Offices were inspected and the results were generally satisfactory.

All the District Forest officers toured for more than the prescribed minimum.

75. *Range office inspections.*—All the Range offices in the Circle were inspected by the District Forest Officers during the year.

76. *Audit.*—All the District Forest offices were inspected by Audit Officers and the results were generally satisfactory.

77. *Recruitment to the Madras Forest College.*—Nobody was deputed during the year.

78. *The Forest (Vernacular Training) School.*—There was none in 1930 for want of a sufficient number of untrained guards.

79. *Relation between Forest and Revenue officials.*—The relations were cordial. The District Forest Officer, *Kurnool East*, was not seen by his Collector from November 1930 until he went on leave on 30th June 1931, indicating a lack of personal touch which is strongly discountenanced.

80. *Health of establishment including an account of measures of sanitation and casualties.*—The health of the establishment was as usual bad in the three *Kurnool* divisions and in the *Palakondas* and *Nallamalais* of *Cuddapah North* division on account of malaria and generally satisfactory in other divisions. One forester and one forest guard in *Kurnool South*, two foresters in *Kurnool West* and one forest guard in *Anantapur* division died of malaria. No special measures of sanitation were undertaken beyond clearance of jungle and vegetation adjacent to staff quarters.

In *Kurnool West* division, one forest guard and one watcher and in *Cuddapah North*, two forest guards were murdered, in the discharge of their duty. The two accused in *Kurnool West* division were acquitted while the murderer in *Cuddapah North* division was sentenced to transportation for life.

Extraordinary family gratuities were granted to the families of the deceased subordinates in all four cases.

CHAPTER VIII—GENERAL.

(i) FORMATION AND MANAGEMENT OF PANCHAYATS.

81. There were changes in the area of ryots' forests in all divisions except *Kurnool West* and *Cuddapah South*. In *Anantapur*, there was an increase of 3 square miles due to adopting resettlement figures for some reserves in *Kudligi taluk* of *Bellary* revenue district of *Anantapur* forest division.

In *Kurnool East*, there was a decrease of 38 square miles due to the resumption by the Forest Department of eight *Eastern Nallamalai* blocks.

In *Kurnool South*, there was an increase of 38 square miles due to the transfer of Kanigiri range of *Nellore* division from the First Circle.

In *Cuddapah North*, Chennupalle reserved forest which was classified as Ryots' forests continues to be under the management of the Forest Department as there is no likelihood of a panchayat being formed.

Thus at the end of the year the total area of ryots' forests was 1,445 against 1,448 at the beginning of the year.

The Adoni East and West reserves of *Anantapur* division referred to in the last year's report continued to be managed by the Adoni Municipality. Orders have since been passed by Government to lease out these reserves to the municipality for a period of 25 years from 1st July 1931.

(ii) MEASURES FOR IMPROVING LOCAL SUPPLIES AND FACILITIES.

82. The wants of the people in the matter of small timber, fuel and bamboos were met in all the divisions by providing timber, fuel and bamboo coupes.

As usual, the public were kept informed by notifications in the Forest Sheets of the District Gazettes of the various descriptions of forest produce available for sale and the rates at which they would be sold at the edge of coupes. Permits were, as usual, issued for removal of green manure leaves.

In *Kurnool East* and *Cuddapah South* divisions, additional felling series (6 in *Kurnool East* and 4 in *Cuddapah South*) were opened during the year.

In *Kurnool South*, the demand for large timber was met by working departmentally the Isukagundam Timber Coupe I of Gundlakamma range. The produce was carted to Diguvametta sale depot and almost the whole quantity was sold except spokes and felloes and some logs. The demand was not very keen. To meet the demand for agricultural implements some wind-fallen trees in the Chelama range and some bandi nogalu (cart-poles) were sold during the year.

In *Kurnool West* palmyra trees were sold as usual. Yepi fibre extraction in Yerramalais continued to provide occupation to the Boyas.

The supply of fuel to *Kurnool* town and *Nandyal* town during the year was larger than last year and fuel was sold cheaper, there being competition for a short time with fuel brought from the Nizam's State by rail.

In *Cuddapah North*, two coupes were secured in public auction by the depressed class people of Mipireddipalle and Regalakunta villages in Vonipenta and Badvel ranges respectively through their co-operative societies.

In *Cuddapah South*, in addition to the new timber and fuel felling series, departmental extraction of red sanders, *Terminalia tomentosa*, *Shorea tumbuggaia* and miscellaneous posts, *Shorea talura* felloes and 'Dollwood' was undertaken from the selected areas in four ranges (Kodur, Rajampet, Balapalle and Sanipaya) and sold locally in periodical public auctions.

The demand for timber, fuel, etc., in *Cuddapah* town was met by fellings in the Palakondas of *Cuddapah* range, Vontimitta and Siddhout ranges of *North Cuddapah* and Ganganapalle range of *Anantapur* division.

(iii) WATER-SUPPLY.

83. In *Anantapur*, Nagappakunta in Amagondapalayam reserve was repaired at a cost of Rs. 38.

In *Kurnool East*, a sum of Rs. 73 was spent on improving the water-supply in the grazing grounds (Ayyanappakunta in Markapur range Rs. 60 and a spring at Arichelima in Dornal range Rs. 13). The well at Chinnamantrala was bored to a depth of 98 feet 6 inches by boring 40 feet 7½ inches and a good supply of water for the Chenchus and their cattle is now ensured.

In *Kurnool South*, the question of laying the pipe line for the supply of water to pilgrims during the festival at Ahobilam by the Mutt authorities is still pending.

In *Kurnool West*, the spring of the *Koneru* at Bairlutty was cleared at a cost of Rs. 13. One pool in Gundlakamma river was cleaned out, at a cost of Rs. 15.

In *Cuddapah North*, a stone trough was installed at Chinnaletipati bhavi and connected with the tube well close by for supply of water to cattle at a cost of Rs. 27.

A draw well was constructed at Kondagorlapenta for the use of coupe contractors, graziers and touring officers at a cost of Rs. 409.

(iv) TIMBER AND SANDALWOOD TRANSIT RULES.

84. Rules are in force in *Cuddapah*, *Kurnool* and the portions of *Anantapur* division which are included in *Cuddapah* and *Chittoor* districts and are reported to have worked satisfactorily. Amendments to rule 7 of the Timber Transit Rules of *Kurnool* and *Cuddapah* to make the registration of property mark obligatory were sanctioned by Government.

The proposals for the introduction of Sandalwood Transit Rules referred to in the last year's report were not sanctioned by the Government pending a general revision of the Sandalwood Transit Rules now in force in many districts of the Presidency.

(v) JUNGLE TRIBES.

85. *Cuddapah*.—Some Yenadis continue to reside in the Vontimitta range of *Cuddapah North* division. They are not troublesome people. In *Cuddapah South* some of them are employed as forest guards and watchers for which they are well suited.

86. *Chenchus*.—(i) The report of Mr. A. V. Sundaram, Extra Assistant Conservator of Forests, on regularizing all the departures made, from time to time, from the rights admitted in favour of the Chenchus at the time of the forest settlement is under correspondence.

There was no change in the Chenchu administration, which continued under the Collector of Kurnool as Special Chenchu Officer. The cost was Rs. 28,635 as against Rs. 26,922 last year.

(ii) *Monthly earning of the Chenchus on works directly connected with forests*.—Chenchu labour was used in all departmental work and by contractors wherever Chenchus were available. The works were timber and bamboo fellings, minor forest produce collection, regeneration operations, and to some extent roads and petty works where skilled labour was not of great importance. The contractors who engaged Chenchu labour paid the Chenchus partly in kind at the local market rate and partly in cash. Besides the above the Chenchus supplemented their earnings by watching the crops of ryots, and as graziers of ryots' cattle. Some are employed as headmen and deputy headmen of gudems, as forest guards, forest watchers, Chenchu school teachers and metta talaiyaris on the ghaut roads.

(iii) *Chenchu crimes*.—The number of cases filed in the Court of the Assistant Chenchu Officer (Ranger V. T. Staggs) during the year was 18 in which 62 persons were concerned as against 21 cases in which 67 persons were concerned during the previous year. Thirteen of these cases relate to offences against the Madras Forest Act, one case of misconduct in public by a drunken person under section 510, Indian Penal Code, one case of hurt under section 324, Indian Penal Code, one case of theft under section 379, Indian Penal Code, one case of enticing a married woman under section 498, Indian Penal Code, and one case of hurt under section 332, Indian Penal Code.

The headmen and deputy headmen appointed under G.O. No. 390, dated 20th March 1926, for nine gudems (seven in the West division, one in the East and one in the South) discharged their duties well and usefully. During the year headmen and deputy headmen were appointed under G.O. No. 656, dated 22nd March 1930, to five more gudems in the Kurnool East division, viz., Peddamantrala, Tummalabailu, Chintala and Peddachama in the Kurnool East forest division and Pangidi in the West division. Their duties are—

- (1) to prevent crimes in the gudems;
- (2) to see that the Chenchu boys and girls attend school regularly;
- (3) to assist the Assistant Chenchu Officer and the forest rangers in all ways for the improvement of the Chenchus;
- (4) to report promptly the appearance of any criminal gang to the nearest Forest or Police Officer; and
- (5) to report the names of absentees and of new Chenchus who came to the gudems; also births and deaths. They are very useful in providing coolies for forest works.

Crime was not bad. Chenchus tend now to live more peaceful and settled lives.

(iv) *Works controlled by the Special Chenchu Officer*.—The total expenditure on Chenchu establishment and works (agriculture, education, industrial schools and medical relief), controlled by the Special Chenchu Officer was Rs. 28,624-13-0 as follows:—

	1930-31.			1929-30.		
	RS.	A.	P.	RS.	A.	P.
8. c.v. Pay of establishment—						
Temporary	16,529	10	0	15,325	13	0
Allowances — Voted — Travelling						
allowances	2,245	15	0	2,503	13	0
Fixed Travelling allowance	298	12	0	287	8	0
Other compensatory	180	0	0	195	0	0
Rents	26	5	0	...		
Miscellaneous	1,356	14	0	926	7	0
Scholarships and stipends	726	15	0	457	6	0
Apparatus and materials	487	7	0	763	3	0
Clothing and equipment	695	13	0	730	0	0
Books and periodicals	221	11	0	199	0	0
Supplies and services—Miscellaneous.	4,776	11	0	5,081	8	0
Maintenance, repairs and renewals—						
Buildings	596	13	0	451	14	0
52-A. Capital—Other works—New						
works—Boring of wells for the						
benefit of Chenchus	485	15	0	...		
Total	28,624	15	0	26,921	8	0

(v) *Agriculture*.—Outstanding loans were Rs. 2,141 at the close of last year. Some groups of Chenchus of the West and East Forest divisions were advanced during the year Rs. 360 and Rs. 1,460, respectively. The recoveries during the year were Rs. 486, leaving an outstanding sum of Rs. 3,475 at the end of the year.

The Chenchus of Indreswaram and Nagaluti in the Kurnool West division and those of Peddachama, Chilakacherla, Tummala-bailu, Garapenta, Chennapalem, Chintala and Peddamantrala in the East division showed some desire to cultivate. A good crop was reaped in the West division while in the East division the crops failed owing to irregular rains. The crops raised were *sajja*, *korra*, *variga*, *olavalu*, *cholan*, *arica* and paddy.

Generally the Chenchus are still far from being interested in agriculture. Lands, if required, are assigned to them on annually renewable leases.

Out of 387.34 acres of land in the Kurnool East Forest division and 44 acres of land in the Kurnool West division assigned free of assessment for cultivation, only half was cultivated. The lesson of the Lambadis (Sugalis) who cultivate lands in the reserved forests on payment of assessment has not yet been learned by the Chenchus. Their cattle form the wealth of the Chenchus who exercised their right to graze their own cattle free.

(vi) *Industries*.—There were three industrial schools at the beginning of the year where carpentry, tape-weaving, making winnows and fans were taught. The District Educational Officer reported of the Chenchu school at Chilakacherla that the vocational branch was more a workshop attached to the school than a training class in handicraft and that this was unlikely to benefit the pupils and so long as a return in money was expected the system would not work well. The Director of Public Instruction prohibited handicraft training in schools which had no class above the fourth standard.

The teachers felt that most of their time must be devoted to the production of finished articles failing which they would incur disfavour. This left them insufficient time to teach the boys to do things themselves. Thus only the rougher preliminary operations were left to the boys in carpentry and the teachers did all the more advanced work partly for fear that the boys might spoil a good piece of wood and partly because they could not wait till the boys laboriously finished a certain task. The Forest Department did their best to help by supplying planks and scantlings instead of rough timber. The finished articles, viz., toys, cart-wheels, winnows, etc., were defective and had little sale value.

For want of a sufficient number of boys between the ages of 12 to 14 who alone could follow with advantage the courses in carpentry and basket-making, the industrial schools were closed during the year. The expenditure on industrial schools during 1930-31 was Rs. 305-2-6 as against Rs. 1,326 of the previous year.

(vii) *Education*.—There were twenty Chenchu schools working at the beginning of this year. One school at Regattikunta in the East division was abolished in May 1930 as the Chenchus there showed signs of migration to other gudems. A new school was opened at Chennupalem in its place in June 1930.

The schools are controlled by the Special Chenchu Officer and are supervised by the Assistant Chenchu Officer and by the Supervisor of Chenchu schools. The Deputy Inspectors of Nandyal, Atmakur and Markapur visited the schools during the year and submitted reports.

The Supervisor of Chenchu schools visited all the schools once in three months and toured on an average for twenty days in a month. Visits were paid by the Collector, District Forest Officers, and District Educational Officer.

There is a teacher for each school but in two schools, viz., Pecheruvu (Boys) and Nagaluti, one additional teacher for each was appointed as the numbers had increased. Proposals for additional teachers required at Pecheruvu (Girls), Bairluti and Indreswaram in the West division and Chilakacherla, in the East division have been kept in abeyance for the present.

Out of 22 teachers employed, seventeen are trained and the rest untrained. The latter were given notice to undergo training during 1931-32 on pain of their services being dispensed with. Trained teachers draw a salary of Rs. 20--1--30 while untrained teachers draw Rs. 15 per month. In addition the teachers draw a hill allowance of Rs. 5 per mensem except those of Chenchu race who are domiciled in the Nallamalais.

Seven teachers are Muhammadans, six Non-Brahmans, four Christians, three Chenchus, one Sugali and one Indian Christian mistress for the Pecheruvu Girls' school.

The number of pupils on the rolls at the beginning of the year was 352 boys and 210 girls while at the close of the year it was 328 boys and 200 girls.

The average number per school was 17 boys and 10 girls as against 17 boys and 11 girls last year. The average daily attendance was 13 boys and 8 girls as against 12 boys and 8 girls last year.

The pupils were taught up to the fourth standard under the revised syllabus prescribed last year.

(viii) *Chenchu scholarships*.—There were three boys studying last year in the Atmakur Board High School with the aid of Government scholarships at Rs. 175 per pupil per annum. Two more boys were admitted during the year from Nagaluti Chenchu School. They were all promoted, and out of five boys one was in the third form, two in the fifth standard and two in the fourth standard.

The boy in the III Form secured a silver medal for throwing the cricket ball at the District Schools Athletic sports (Pentland Sports for District High Schools) at Kurnool.

A midday meal costing one anna was supplied daily to all pupils to stimulate attendance at school. A sum of Rs. 3,566 was spent on this. It is considered that the feeding and the clothing of these children is a potent factor in keeping the adults settled each in his own gudem and gives us a hold over them, besides the good which it does to the rising generation.

In Pecheruvu girls' school, the mistress interested herself in teaching needle-work—a good feature. Rupees 5 was spent on cloth, needles and thread.

The schools are very close to the Chenchu gudems. There are thatched buildings for the school and the teacher separately. At Pecheruvu and Bairluti there are *pakka* built schools. There are kitchen sheds. A new school and teachers' shed were built at Chennapalem during the year. The cost of repairs to schools and teachers' sheds, etc., during 1930–31 was Rs. 597 against Rs. 452 last year. All the buildings were kept in proper repair.

The health of pupils and teachers suffered as usual from malaria and enlarged spleen. Several teachers were obliged to go on leave which dislocated work, as it is difficult to get suitable substitutes for short periods of leave without loss of time.

Expenditure on Chenchu schools was as follows:—

	1930-31			1929-30		
	RS.	A.	P.	RS.	A.	P.
Teachers' salaries	6,905	14	0	6,732	0	0
Supervisor's pay	687	0	0	1,060	14	0
Pay of Supervisor's peon	180	0	0	156	0	0
Repairs to school sheds	596	13	0	451	14	0
Purchase of furniture	277	0	0	79	7	0
Purchase of books	221	11	0	203	0	0
Cleaning charges	115	12	0	214	1	4
Feeding charges	3,566	8	3	3,541	8	0

	RS. A. P.			RS. A. P.		
Travelling allowance of Supervisor's peon	79	10	0	91	11	0
Travelling allowance of Supervisor	3	8	0	...	...	...
Travelling allowance of teachers on transfer	69	12	0	72	13	0
Clothing and equipment	695	13	0	730	0	0
Scholarships and stipends	726	15	0	457	6	0
Industries	305	2	6	1,326	0	0
	14,631	6	9	15,116	10	4

(ix) *Medical aid*.—As usual, the Sub-Assistant Surgeon on Chenchu duty visited the gudems on regular tours. Health of the Chenchus was generally satisfactory. Smallpox and cholera were prevalent in some gudems for short periods, and the Sub-Assistant Surgeon gave aid. The Chenchu has taken readily to Salvarsan injections and the local officers believe that markedly good results have followed. This is very important. The expenditure on medicines was Rs. 487. The headquarters of the Sub-Assistant Surgeon was moved from Dornal to Atmakur during the year. The total expenditure for medical relief was Rs. 2,415.

(x) *Miscellaneous works*.—Boring for wells for the benefit of Chenchus was done in Chinnamantrala at a cost of Rs. 405 in Kurnool East division and wells were deepened at Yathambhavi and Nimmathotachelama of Ganjivaripalle range and Chilakacherla well of Dornal range in the East division at a cost of Rs. 30, Rs. 20 and Rs. 31, respectively.

MINING AND QUARRYING.

87. *Anantapur*.—No fresh mining licences were granted during the year.

Several prospecting licences were granted for barytes (barium sulphate) in Ganganapalle range and there was activity in staking out claims. The barytes is railed to Calcutta.

Kurnool West.—Two slab quarries were leased out as usual for a term of five years up to 31st March 1935.

Cuddapah South.—One manganese plot in Balapalle range was leased out by the Revenue Department but the contractor did not start work during the year.

LIVESTOCK.

88. (a) *Elephants*.—The two baggage elephants continued in Kurnool West division, their health gave anxiety.

(b) *Buffaloes*.—The two buffaloes at Horsleykonda, for carrying water to the forest camp and garden continued.

VETERINARY ESTABLISHMENTS.

89. Nil.

SUITS.

90. Nil.

CONTROL OF UNRESERVED LANDS BY THE FOREST DEPARTMENT.

91. Three hundred and forty-six acres of assessed waste in Garga village adjoining Bandri reserve in Hospet range in Anantapur continued under Forest management for the sake of the sandalwood in it.

In Kurnool East division the Amaroy (minor forest produce) in unreserves in fourteen villages of Cumbum and Markapur taluks was leased along with the reserved forests for the year ended 31st August 1931. The aim was to avoid friction.

The forest rules for unreserved lands in the Kurnool district and for the revenue realized by the Revenue Department were revised and published in the District Gazette for February 1931.

92. *Cultivation in reserved forests—Kurnool East*.—No fresh assignments of lands for cultivation in reserved forests were made in the year. The Sugalis continued to cultivate on payment of assessment.

93. *General—Miscellaneous*.—One man-eater (tigress) was shot in Turimella range, for which the shikari got the notified reward of Rs. 150.

ENCLOSURE.

A BRIEF ACCOUNT OF FOREST OPERATIONS AND THEIR RESULTS IN THE SEVERAL DIVISIONS OF THE SECOND CIRCLE, BELLARY, DURING 1930-31.

ANANTAPUR.

Description and area.—The Anantapur Forest division comprises 1,791 square miles of reserved forest, of which 576 square miles are class I reserves under the management of the Forest Department and 1,215 square miles are class III reserves under panchayat management.

The former includes the Adoni East and West blocks with an area of 5.46 square miles, which is managed by the Adoni municipality under the general control of the District Forest Officer. Orders have since been passed by Government to lease out this area to the municipality for a period of 25 years from 1st July 1931. In addition to the above, 346.44 acres of unreserved land in Garga village limits of Hospet range is under the control of the Forest Department as it contains a large quantity of sandal. The division includes the whole of Anantapur and Bellary, and parts of Cuddapah and Chittoor districts. The forests of the division include five separate groups of hills:—

(1) and (2) The Kadiri and Madanapalle groups which together form the Madanapalle forest range;

(3) the Bukkapatnam group which comprises the forest range of that name;

(4) western tongue of the Palakondas comprising the Vempalle and Ganganapalle forest ranges; and

(5) the Hospet group forming part of Hospet range.

In addition there are a few isolated hills and about 25 square miles of forest in the plains, chiefly on the upland plateau of Hospet at 2,000 feet elevation.

The forest growth is mostly rather poor, as the tract is arid. The Ganganapalle and Vempalle ranges contain red sanders forest of poor quality. The Amagondapaliem and Kothakota reserves of Bukkapatnam range contain fair patches of *Hardwickia binata*, *Anogeissus*, and *Chloroxylon swietenia*; very little large timber is obtainable in the division.

2. *Subordinate executive and protective charges*.—There are five ranges and 57 beats in the division with eleven foresters. Each beat is in charge of one forest guard and one watcher:—

Bukkapatnam	...	...	...	...	12	beats.
Madanapalle	...	...	...	...	17	"
Hospet	...	...	...	...	9	"
Ganganapalle	...	...	...	...	8	"
Vempalle	...	...	...	...	11	"
					57	

3. *Cost of administration*.—The establishment charges during the year were as follows:—

	RS.
District Forest Officer	11,909
Range Officers	7,169
Subordinate staff	16,969
Clerical establishments	8,790

Total ... 44,837

In addition, the temporary establishment—Forest watchers, bungalow watchers and menial staff—cost Rs. 7,747.

4. *Cost under other important heads.*—Rupees 2,206-1-0 was spent on the new Range office and quarters at Madanapalle. Of this amount, Rs. 1,698-8-0 was additional compensation awarded by the Court, and Rs. 507-9-0 was spent on capital repairs.

There was no expenditure on developing the division. Small sums were spent on necessary repairs to roads and buildings.

The maintenance of reserve boundaries, the eradication of lantana at Horsleykonda the creation of propagation centres for sandal, and some *rab* sowings in worked fuel coupes was carried out free of cost by the staff.

5. *Income from main sources.*—The unreserves provide 74 per cent of the total revenue of Anantapur division. Tangedu bark is the chief source of revenue. The revenue obtained from timber and fuel is thrice as much from the unreserves as from the reserves. Minor Forest produce, grazing and compounding fees are the other chief sources of income. The introduction of sandalwood is expected to increase largely the value of some of the forests.

Details of revenue are given below:—

	RS.	
Sandalwood	661	Reserves.
Timber	1,285	Do.
	16,204	Unreserves.
Firewood and charcoal ...	5,073	Reserves.
	4,877	Unreserves.
Bamboos	425	Reserves.
Grazing	23,829	Do.
Minor produce	7,393	Do.
	1,43,426	Unreserves.
Miscellaneous	18,989	Reserves and
		Unreserves.
Total	2,22,162	
Deduct refunds	106	
Net	2,22,056	

6. *Chief works in the division.*—The management aims at the creation of a valuable sandalwood estate in course of time, and at improving the stocking and quality of the natural forests, by protective measures and by sylvicultural operations. The chief works are therefore protection, grazing control, the creation of sandal propagation centres, and the improvement of the growing stock by felling—coppicing or cutting back—supplemented by *rab* sowings.

7. The financial results are analysed below after apportioning the 'Direction' receipts and charges.

	RS.
Revenue	2,22,067
Expenditure	83,153
Net profit	1,38,914

KURNOOL EAST.

Description and area.—The area of the reserves under the control of the Forest Department is 945 square miles the increase over the year 29-30, being due to resuming the Nallamalais extension blocks which are under panchayat management till the end of June 1930. An area of 33 square miles is under panchayat management. The outer slopes are practically devoid of good tree growth except for some scattered, stunted and gnarled yepi (*Hardwickia binata*) trees. A large part of the interior of the hills, which support an irregular, mixed, open, deciduous forest of varying density, is economically unworkable except for minor forest produce and bamboos. The most important species imposing the crop in the workable interior valleys are *Terminalia mentosa*, *Pterocarpus marsupium* and an occasional teak and rosewood. This type of forest is confined to localities with an average annual rainfall of about 40 inches, the rainfall elsewhere in the less wooded portions being only about 20 to 25 inches. Bamboos occur throughout the Zone of low rainfall.

2. *Subordinate, executive and protective charges.*—The division is divided into 5 ranges and 37 protective beats, with 12 Foresters. The names of the ranges and the number of beats in each are shown below:—

Name of range.	Number of beats.
1. Dornal	9
2. Ganjivaripalle	5
3. Markapur	7
4. Turimella	10
5. Yerragondapalem	6

An additional staff of three Forest Guards and three watchers has since been sanctioned to form a new beat, in each of the Dornal, Markapur and Yerragondapalem ranges, for the panchayat forests which have been resumed.

3. *Cost of administration.*—The total expenditure under '8-b. Conservancy and works,' '52-A. Capital outlay on Forests' and 'C. Establishments' during 1930-31 was Rs. 68,033 of which Rs. 52,176 was on the establishment, being 77.79 per cent of the total expenditure. The charges noted here do not include the expenditure in connexion with the Chenchus during 1930-31.

4. *Cost under other important heads.*—Departmental timber and bamboo fellings were undertaken to provide work for the Chenchus at a cost of Rs. 1,310.

The maintenance of roads and buildings, *rab* sowings and other miscellaneous and petty items of expenditure cost Rs. 11,516. This sum includes the pay of reserve watchers to the extent of about Rs. 4,300.

On the construction of new buildings and wells a sum of Rs. 2,071 was spent during the year.

5. *Income from main sources.*—The main sources and the percentage they form of the gross receipts of 1930–31 are noted below:—

	RS.	PER CENT.
1. Grazing and fodder grass ...	29,337	55
2. Other minor produce ...	4,734	Reserves. } ... 19
	5,294	
3. Miscellaneous ...	5,380	(Reserves and unreserves) ... 10
4. Timber and fuel ...	4,581	Reserves. ... 10
	646	Unreserves ... 10
5. Bamboos ...	3,445	Reserves ... 6
Total ...	53,417	100
Deduct Refunds ...	15	
Net ...	53,402	

6. *The chief work done in the forest division.*—The chief work was to provide the Chenchus, who are scattered all over the division in 23 gudemns with an aggregate population of 1,866 persons (510 adult men and 502 adult women and 854 children) with congenial occupation such as felling of timber and bamboos, and collection of minor forest produce. By degrees departmental felling is being replaced by the system of sale of standing growth. Dead wood and wind falls were collected in two localities, departmentally for the local market.

Regeneration is an important work which is carried out in felled timber and fuel coupes. The Chenchu schools were kept up, medical aid was given by the Sub-Assistant Surgeon employed for the purpose whose headquarters is at Atmakur: loans were given to the Chenchus for plough bulls and land on annual lease.

The industrial school at Chillakacherla where carpentry and basket making were taught was closed during the year as there are not enough boys of suitable age who can receive such handicraft training usefully.

7. The financial results of the division after apportioning the 'Direction' receipts and charges are given below:—

	RS.
Revenue ...	53,415
Expenditure ...	77,496
Deficit —	24,081

KURNOOL SOUTH.

Description and area.—The area of reserves under departmental control is 665 square miles of which the Nallamalais and its foot hills cover about 532 square miles and the Veligondas 133 square miles. This includes Kanigiri range transferred from Nellore division during this year. The area under panchayat management is 57 square miles,

The dry forest is of the mixed deciduous type. The principal species are teak, *Terminalia tomentosa*, *Pterocarpus marsupium*, *Dalbergia latifolia*, *Anogeissus latifolia* and *Hardwickia binata*.

Most of the accessible portions have been heavily cut over in the past. The foot hills for the most part consist at present of trees fit only for fuel and small timber, for which they are being worked. There are some small interior valleys which contain a better type of forest where timber trees of comparatively large size are found. Elsewhere on the outer slopes Pole forests lend themselves to remunerative working.

Bamboos are found almost throughout the forest and they form one of the chief sources of revenue.

2. *Subordinate, executive and protective staff.*—The division consists of five ranges with 41 beats and 18 Foresters.

3. *Cost of administration.*—The cost of administration (establishment charges including contingencies) was Rs. 66,967 forming 80 per cent of the total expenditure.

4. *Cost under important heads.*—The total expenditure under '8-b. Conservancy and works' and '52-A. Capital' was Rs. 17,609 of which Rs. 880 was spent for roads and Rs. 3,167 for buildings and wells. Of the remaining expenditure, Rs. 5,115 represents the cost of departmental timber operations and Rs. 697 spent on regeneration, fire protection, etc., a sum of Rs. 7,308 was spent under 'timber and other produce removed from the forests by consumers and purchasers.'

5. *Income from main sources.*—Bamboos contributed 33 per cent of the gross receipts of the year. Timber and fuel came next with 30 per cent while grazing produced 17 per cent. Miscellaneous items yielded 12 per cent and minor forest produce 8 per cent.

Details of revenue realized are given below:—

	RS.	
Timber ...	25,439	Reserves.
	957	Unreserves.
Fuel ...	7,914	Reserves.
	1,105	Unreserves.
Bamboos ...	38,177	Reserves.
Grazing ...	19,699	Do.
Minor produce ...	3,149	Do.
	4,783	Unreserves.
Miscellaneous ...	16,139	Reserves and unreserves.
Total ...	1,17,362	
Deduct Refunds ...	362	
	1,17,000	

6. *Chief works in the division.*—These are the departmental extraction of big timber, and the felling by lessees (Coupe contractors) of timber-cum-fuel, fuel and bamboo coupes.

During the year a quantity of 34,000 cubic feet of comparatively big timber was extracted departmentally for sale while a quantity of 133,000 cubic feet of small timber was extracted by lessees, who also extracted 203,000 cubic feet of fuel.

7. Financial results after apportioning the 'Direction' Receipts and Charges are as noted below:—

	RS.
Revenue	1,17,812
Expenditure	94,038
Net profit	22,974

KURNOOL WEST.

Description and area.—The area of reserves under departmental control in the division is 854 square miles of which the Yerramalais form 300 square miles and the rest of the area is included in the western portion of the Nallamalais including their foothills. The area under panchayat management is 90 square miles.

The Yerramalais support an inferior type of very open deciduous mixed Forest in which yepi (*Hardwickia binata*) predominates in most parts, sometimes occupying pure patches while teak, *Anogeissus* and *Terminalia tomentosa* affect special localities. Nearly everywhere the trees are stunted and malformed and nowhere are they fit for timber. Even yepi is only fit for fuel at present as it was very badly hacked in the past. Hardly a single yepi tree in the Yerramalais escaped pollarding in the past. Rainfall in this region is scanty and the soil of little depth.

The Nallamalais have better soil, more rain and better forest. Even here, areas fit for growing big timber are confined to special localities such as some of the inner valleys and plateaux where timber felling does not pay as yet. The terai however contains areas where profitable working of small timber and fuel is possible. It is here that the bulk of the Chenchus are established and through their agency the departmental works are carried out. Bamboos are abundant throughout the Nallamalais, and they produce a steady revenue.

2. *Subordinate, executive and protective charges.*—There are seven ranges, two in the Yerramalais and five in the Nallamalais with 38 protective units (beats) in all with 21 foresters: the names of ranges and the number beats in each are as below:—

Name of range.	Number of beats.
Kurnool	9
Dhone	7
Nandyal	4
Gundlabrahmeswaram	5
Bairlutty	5
Sivapuram	6
Pecheruvu	2
	38

3. *Cost of administration.*—The cost of establishment including contingencies has been Rs. 82,578.

4. *Cost under other important heads.*—The system of leasing timber, uel and bamboo coupes to contractors, who use Chenchu labour was continued.

On the annual maintenance of roads, buildings and other works an aggregate expenditure of Rs. 2,600 was incurred while sowing and planting, fire-protection and maintenance of boundaries cost Rs. 2,488. The upkeep of two baggage elephants cost Rs. 2,134. New roads, buildings and wells cost Rs. 7,250 out of which Rs. 7,078 was spent for completing the Sudem-Adutla road which was begun in the previous year.

5. *Income from main sources.*—Small timber and fuel gave 20 per cent of the gross revenue, minor forest produce gave 34 per cent grazing 24 per cent and bamboo 10 per cent.

Details of revenue under each head are given below:—

	RS.
Timber	10,346 (Rs. 3,569 from unreserve).
Fuel	16,660 (Rs. 2,677 from unreserve).
Bamboos	15,460
Minor forest produce	50,553 (Rs. 33,045 from unreserves).
Grazing	34,598
Miscellaneous	17,473 (Reserves and unreserves).
	1,45,090
Deduct Refunds	65
	1,45,025

6. *Chief works done in the division.*—The chief works during the year were—

- (1) Timber and fuel felling, and bamboo and minor produce collection, through the agency of lessees.
- (2) The Chenchu schools and Chenchu administration.
- (3) Maintenance of roads and buildings.
- (4) Regeneration by *rab* sowings on a large scale.
- (5) Completion of the new road from Adutla to Sudem.
- (6) Fire-protection by early burning.

Revision of working plans.—For the Nallamalai and Yerramalais were completed during the year and they are pending sanction by the Chief Conservator.

7. The net financial result is seen below after apportioning the 'Direction' Receipts and Charges:—

	RS.
Revenue	1,45,039
Expenditure	1,19,647
Net profit	25,392

CUDDAPAH NORTH.

1. *Description and area.*—The Forest division is 790 square miles in area of which 32 square miles are under panchayat management. It includes the whole of the Lankamalais, portions of the Palakondas and the Veligondas and the southern extremity of the Nallamalais.

Two distinct types of forests are met with, viz., 'Terai' or fuel forests (scrub jungle type) and the hill or timber forests. These are deciduous, irregular in character and vary considerably in their density and condition according to soil. The chief species met with in the hill forests are

- (1) *Pterocarpus santalinus* (red sanders),
- (2) *Anogeissus latifolia*, and
- (3) *Pterocarpus marsupium* (yegi). The first named is the typical tree of the district.

The inner slopes and plateaux contain inferior pole forests in which red sanders predominate in the south growing along with *Pterocarpus marsupium*, *Anogeissus latifolia* and *Terminalia tomentosa*. But northwards the red sanders gradually disappears giving place to the yegi.

Hardwickia binata and *Acacia Sundra* occur in pure patches, but neither grows to a large size.

The forest on the foothills or terai and on the outer slopes are typically of thorny species only fit for fuel. The tree growth met with in these areas is very open and stunted.

Bamboos, tooki leaves (*Diospyros*) plate leaves and rela bark, gum, honey, wax, etc., are available in limited quantities.

2. *Subordinate, executive and protective charges.*—The Forest division is divided into five ranges with 46 beats (each in charge of a forest guard and a forest watcher) with 13 Foresters.

Names of range.						Number of beats.
Sidhout	...	...	...	...	...	6
Badvel	...	...	...	...	...	8
Porumamilla	...	...	...	...	...	10
Vonipenta	...	...	...	...	...	12
Vontimitta	...	...	...	...	...	10
						46

3. *Cost of administration*—including contingencies was Rs. 52,908.

	RS.
District Forest Officer	10,267
Rangers	8,486
Subordinate staff	17,643
Clerical staff	9,432
Total	45,828

4. *Cost under other important heads.*—The total expenditure during the year on 'Ordinary' and 'Capital' works debitable to '8-b. Conservancy and works' and '52-A. Capital outlay' was Rs. 18,035.

Timber, fuel and other forest produce was sold standing to lessees and there was no expenditure on departmental exploitation.

The following are the Capital works undertaken:—

	RS.
Construction of range quarters at Vontimitta	2,610
Tiling Chinnaletipatibhavi rest-house	320
Construction of bridle-path from Jothi to Chinnaletipatibhavi and formation of a road to connect with South Cuddapah limits in Palakondas	1,344
Fencing the bore well at Chinnaletipatibhavi	38

All other works were of a recurring nature such as maintenance of roads and buildings, cultural operations, fire-protection, etc.

5. *Income from main sources.*—Small timber and fuel contributed together 33 per cent of gross revenue; grazing 38 per cent.

Details of revenue under different items are given below:—

Timber	3,051	from reserves.
	147	„ unreserves.
Fuel	20,079	„ reserves.
	659	„ unreserves.
Bamboos	5,945	
Grazing	27,689	
Minor Forest Produce.	3,953	from reserves.
	4,040	„ unreserves.
Miscellaneous including confiscations	7,589	Reserves and unreserves.
	73,152	
Deduct—Refunds	195	
Net	72,957	

6. *Chief works done in the division.*—The extraction of both major and minor produce was carried out as usual through the agency of contractors.

During the year 31,587 cubic feet of small timber and about 17,150 tons of fuel (exclusive of yield from unreserves) were extracted by them. All bamboo blocks were also leased out.

Grazing and penning were allowed as usual on permits issued at fixed rates. Propagation of sandalwood in fenced plots in each beat continued.

7. The net financial results are seen below, after apportioning the 'Direction' Receipts and Charges:—

	RS.
Revenue	72,966
Expenditure	80,404
Deficit ...	7,438

CUDDAPAH SOUTH.

Description and area.—The forests are mostly deciduous and irregular but ever-green scrub is also found here and there, notably along stream banks. The forests mainly lie in the following hill ranges:—

- (1) The Seshachellams.
- (2) Part of the Palakondas.
- (3) Part of the Veligondas.

The Veligondas bear a very small proportion of poor red sanders. Important timber species are firstly red sanders, and then *Anogeissus latifolia*, *Hardwickia binata*, three *Terminalias* (*Terminalia tomentosa*, *Terminalia chebula*, *Terminalia belerica*) and *Pterocarpus marsupium*. These species grow in both the Palakondas and Seshachellams. The Seshachellams forests can be divided into two types:—

- (1) Plain or fuel forests.
- (2) Hill forests—Red sanders zone up 2,000 feet—elevation.

The plain or fuel forests contain miscellaneous fuel species with a small proportion of stunted and deformed timber species. The hills contain the more important timber forests, including the inner slopes and high plateaux up to an elevation of 2,000 feet. The species above 2,000 feet are *Shorea tumbucgia* and *Shorea talura* with *Eugenia alternifolia*, *Gardenia*, *Buchanania*, wild date and *Cycads*.

The total area of the division is 440,978 acres or 689 square miles of which 18 square miles are under panchayat management.

2. *Subordinate, executive and protective charge.*—There are six ranges with 52 beats (one forest guard and one watcher for each beat) and eighteen foresters.

Range.	Number of beats.
Cuddapah	8
Rajampet	10
Kodur	8
Balapalle	9
Chitvel	8
Sanipaya	9
	52

3. *Cost of administration*—for the year 1930–31 was Rs. 62,425 including contingencies of which establishment charges alone were as noted below:—

	RS.
(a) District Forest Officer	10,309
(b) Rangers	11,450
(c) Subordinate staff	28,037
(d) Clerical staff	10,453
	60,249

Note.—In the amount shown against the subordinate staff (c) the sum of Rs. 9,755 being the pay of forest watchers and tanadars was debited to 8 (b) conservancy and works.

4. *Cost under other important heads.*—The works that require special mention are the following:—

	RS.	A.	P.
(1) Completion of the Rajampet range quarters ...	1,448	8	0
(2) Construction of compound wall for the same ...	238	0	0
(3) Formation of Korthimadugu-Dasarladdoddi road in Cuddapah range (2 miles 3 furlongs 3 chains)	576	8	0

The remaining works are of a recurring nature such as repairs to roads and buildings, fire-protection and works of minor importance. The aggregate cost of expenditure under '8 (b) Conservancy and Works' and '52-A. Capital outlay' was Rs. 21,125.

5. *Income from main sources.*—Timber and fuel and bamboo coupe leases minor forest produce, grazing, penning fees, compounding fees for forest offences, departmental extraction of red sanders and other timber species by selection fellings and extraction of red sanders and sandalwood from Kodur plantation were the main items. The total revenue from all sources was Rs. 1,69,579. Details of revenue are given below:—

	RS.
Sandalwood (reserves)	110
Timber (from reserves)	7,979
Timber (from unreserves)	396
Fuel (from reserves)	1,24,056
Fuel (from unreserves)	333
Bamboos	4,925
Grazing	15,103
Minor Forest Produce (reserves)	3,430
Minor Forest Produce (unreserves)	4,666
Miscellaneous (including confiscations) (reserves and unreserves)	8,581
Total ...	1,69,579
Deduct—Refunds ...	347
Net ...	1,69,232

6. *The chief works done in the division.*—Almost all the fuel goes to Madras and several coupes are taken by Madras contractors. It is only since Madras contractors came in, that the revenue from the timber and fuel coupes rose steeply and the division showed a profit. It was working at a loss before that, largely because local contractors had a monopoly and combined to depress coupe prices at the sales.

Extraction of timber by selection felling in the hill reserve and from the Kodur red sanders plantation was done departmentally. About 21,359 cubic feet of small timber and 5,084,160 cubic feet or 42,368 tons of fuel were available for sale during the year under report against 28,800 cubic feet of small timber and 31,300 tons of fuel in the previous year.

Grazing and penning were allowed as usual on permits issued at the fixed rates as before.

7. The financial results after apportioning the 'Direction' Receipts and Charges are as noted below:—

	RS.
Revenue	1,69,243
Expenditure	94,906
Net profit	74,337

BELLARY, J. H. LONGRIGG,
25th August 1931. *Acting Conservator of Forests, Second Circle.*

ANNUAL ADMINISTRATION REPORT OF THE FOREST DEPARTMENT

FOR THE

YEAR ENDING 31st MARCH 1931.

THIRD WORKING PLANS CIRCLE

CHAPTER I.—DETAILS OF WORK UNDERTAKEN IN CONNECTION WITH THE PREPARATION AND REVISION OF WORKING PLANS.

(i) GENERAL SURVEY.

The Working Plans Circle included, during the year under review, six working plan parties and the Sylvicultural Research division. One new working plan, that for Kollegal district, was taken up in August 1930 and two plans, those for the Ghumsur forests of Ganjam and the Mount Stuart forest of South Coimbatore, were completed in March 1931 and were submitted to the Chief Conservator of Forests for approval and sanction.

2. On the completion of the Ghumsur Working Plan, that working plans division was closed and a new division was opened in Lower Godavari to consolidate the scattered plans already in existence and to put under ordered working those parts of the district for which there are at present no working plans.

3. No new working plans division was formed to take the place of the Mount Stuart division, which was closed down on completion of the working plan, for the reason that the parties working were previously in excess of the sanctioned number, being six instead of five.

4. The total area of the forests of the Madras Presidency is 16,749 square miles.

Of this area there was, at the commencement of the year under review, 440 square miles under working plans prepared since the

inception of the Working Plans Circle; during the year the working plans for Mount Stuart and Ganjam were completed and submitted for sanction making an additional 654 square miles under working plan.

Working plans were in progress during the year for a further 1,919 square miles.

An area of 7,606 square miles is under working plans and schemes prepared by other agency, which mostly now require revision.

5. Preliminary arrangements were made for the creation of a second Sylvicultural Research division for work in the dry forests.

A triennial programme of research for both the Sylvicultural Research divisions was under preparation at the close of the year, it having been decided to draw up, in the first place, a triennial programme, on which the annual plan of operations will be based, and, subsequently, when this programme is nearing completion, and more exact knowledge of the work has been obtained, to consider the advisability of preparing for the future quinquennial programmes.

(ii) PROGRESS MADE IN WORKING PLANS.

6. *No. 1 Working Plan Division—Working plan for the Ghumsur forests.—*

Area covered by the working plan—600 square miles.

Total cost of preparation of the working plan—Rs. 56,676.

Date of initiation of the working plan—February 1928.

This working plan was completed on 28th March 1931 and is now with the Chief Conservator of Forests for approval and Government's sanction.

A Deputy Conservator of Forests, Mr. M. Kesavanunni Navar, I.F.S., was in charge of the working plan throughout the period, from February 1928 to 28th March 1931, that it has taken to complete it.

His staff consisted during the year under review of two rangers and one forester.

This working plan has for its aim the rehabilitation of the Sal forests that were largely ruined by over-exploitation in the interests of the Russellkonda Sawmill, during the years 1922—27.

Any considerable profit in working is therefore not to be expected, and it is, indeed, fortunate that the financial results anticipated show a small surplus of Rs. 3,050 per annum, and not an annual loss for many years.

7. *No. 1 A Working Plan Division—Working plan for the Mount Stuart forests of South Coimbatore Forest division.—*

Area enumerated and stock-mapped in previous years.	Area enumerated and stock-mapped in 1930-31.	Total area enumerated and stock-mapped.
---	--	--

19,925

7,037

26,962

Total area covered by the working plan—54.43 square miles.

Total cost of preparation of the working plan—Rs. 1,22,679.

Date of initiation of the working plan—7th September 1927.

As pointed out last year the cost of the working plan would have been much less had it been possible to post sufficient subordinates to this division earlier.

This working plan was completed on 1st April 1931 and is pending with the Chief Conservator of Forests for approval and Government's sanction.

Mr. M. V. Laurie, I.F.S., was in charge of the division from its inception until 20th January 1931 when he proceeded to Dehra Dun, after practically completing the work.

The Conservator was in additional charge of the working plan from 20th January 1931 till date of its closing.

Mr. R. B. Cornwell, I.F.S., was posted as an attached officer from 6th December 1930 to 15th April 1931, and attended to the completion of the working plan maps and to various other matters after Mr. Laurie had left for Dehra Dun.

The working plan staff during the year consisted of two rangers and twenty-one foresters.

The plan for the Mount Stuart forests also aims chiefly at re-constituting a forest that has been overworked in the past, though not, in this case, in the recent past. The financial results expected are therefore a matter for congratulation. An annual net surplus of Rs. 1,24,000 is anticipated which amounts to Rs. 3.56 per acre. The gross anticipated revenue per acre is Rs. 9.27, and the gross expenditure is Rs. 5.71, the expenditure thus being 61.6 per cent of the gross revenue.

For a forest that was, some 40 years ago, reported to contain no timber of any value, and which is now under process of rehabilitation, this is, to say the least of it, satisfactory.

8. No. 2 Working Plans Division for the forests of Mangalore South and North—

Staff—

One Deputy Conservator—Mr. P. W. Davis—throughout the year;

Two Extra Assistant Conservators—One from 6th April 1930 to 24th July 1930 and from 27th August 1930 to 30th November 1930, and another from 1st May 1930 to 30th September 1930 and from 27th November 1930 to 31st March 1931;

three rangers, one supernumerary ranger and four foresters, throughout the year; and
one ranger and one forester—for one month only.

Of the above staff two rangers, one supernumerary ranger and two foresters, working throughout the year, and one ranger and one forester, working for one month, were employed on the *South Mangalore Working Plan*; and one Extra Assistant Conservator of Forests, one ranger and two foresters were employed on the *North Mangalore Working Plan*.

The Deputy Conservator of Forests was responsible for both working plans.

Mangalore South division—

Total area of the working plan—438.0 square miles.

Date of initiation of the working plan—29th November 1927.

Details of work.		acs.	Cost per acre.		
			RS. A. P.		
Prior to 31st					
March 1930 ...	Area enumerated ...	1,345	0	5	11.7
Do. ...	Area stock-mapped...	54,230	0	0	0.6
In 1930-31 ...	Area enumerated ...	502	0	8	3
Do. ...	Area stock-mapped...	143,437	0	2	0

Mangalore North division—

Total area of the working plan—359 square miles.

Date of initiation of the working plan—6th April 1930.

Details of work.		acs.	Cost per acre.		
			RS. A. P.		
In 1930-31 ...	Area enumerated ...	115	0	6	1.5
Do. ...	Area stock-mapped...	75,158	0	0	0.3

9. No. 3 Working Plans Division for the Silent Valley Forests of Palghat.—

Total area of the working plan—139.27 square miles.

Date of initiation of the working plan—3rd January 1929.

Staff—

One Extra Assistant Conservator of Forests, Mr. T. V. Venkateswara Ayyar, as Working Plans Officer.

One ranger and five foresters till 18th December 1930, and one ranger and six foresters till the end of January 1931 and then two rangers and seventeen foresters till the end of March 1931.

Details of work.		acs.	Cost per acre.		
			RS. A. P.		
Prior to 1930 ...	Area enumerated (100 per cent enumeration).	1,500	0	6	9.6
In 1930-31 ...	Area enumerated (50 per cent enumeration)	8,500	0	0	7.2

This working plan is practically confined to rain forest, consisting of very dense tall evergreen forest, with a big lower storey, and heavy undergrowth, swarming with leeches.

10. No. 4 Working Plans Division for the forests of North Coimbatore and Kollegal—

Staff.—

One Deputy Conservator of Forests, Mr. C. R. Ranganathan, I.F.S., as Working Plans Officer in charge of both working plans.

One supernumerary ranger, four trained foresters, and two foresters, worked throughout the year. Three more rangers were added to the staff in August, November and February 1931 and one forester in November 1930. One temporary forester was appointed on 11th December 1930 and another in March 1931.

North Coimbatore division—

Total area of the working plan—877 square miles.

Date of initiation of the working plan—6th April 1928.

Details of work.		acs.	Cost per acre.		
			RS. A. P.		
Prior to 1930 ...	Sandalwood—				
	Area enumerated (100 per cent enumeration) ...	24,589	0	0	9.7
In 1930-31 ...	Area stock-mapped (general) ...	267,200	0	0	0.6
	Area stock-mapped (detailed) ...	63,365	0	0	5.8

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Kollegal division—

Total area of the working plan—947 square miles.

Date of initiation of the working plan—September 1930.

Details of work.		acs.	Cost per acre.		
			RS.	A.	P.
In 1930-31	Sandalwood—				
	Area enumerated	24,268	0	0	0.6
	Area stock-mapped (general).	22,350	0	0	0.4

11. *No. 5 Working Plans Division for the Wynaad Gh forests—*

Total area of the working plan—106 square miles.

Date of initiation of the working plan—9th September 1929.

Staff—

One Deputy Conservator of Forests, Mr. A. N. Sarma, I.F.S., throughout the year.

One ranger and four foresters throughout the year and one ranger and four foresters from the middle of February to the end of March 1931.

Details of work.		ACS.	Cost per acre.		
			RS.	A.	P.
Prior to 1930	Area stock-mapped.	13,888	0	0	1.67
...	Area enumerated	Nil.	Nil.		
In 1930-31	Area stock-mapped.	15,680	0	0	1.5
...	Area enumerated (33 per cent)	7,360	0	4	3

This working plan is largely confined to rain forest similar to that of the Silent Valley referred to above.

12. *Lower Godavari Working Plans division (will be No. 1 Working Plans division)—*

Total area of the working plan ... 488 square miles.

Date of initiation of the working plan ... March 1931.

Staff—

One Extra Assistant Conservator of Forests, Mr. V. N. Jagiri Rao, as Working Plans Officer.

One supernumerary ranger and one forester.

Details of work.—The working plan was taken up only in March 1931, and the staff was employed on the preparation of the preliminary report.

13. *Working plan for the New Amarampalam forests of Nilambur division.*—The preparation of this working plan is in the hands of Mr. R. S. Browne, I.F.S., the District Forest Officer of Nilambur Forest division, under the joint control of the Conservator of Forests, Third (Working Plans) Circle, and the Conservator of Forests, Sixth (Territorial) Circle. The preliminary enumeration survey was made by the old logging engineering division in 1926—1928. At that time the clear-felling of rain forests, and extraction by American lumber methods, was contemplated, but subsequently the injurious effects of such operations in evergreen sholas became evident, and a different method of treatment had to be prescribed. The working plan that is now being drawn up will pay strict attention to the principles of sustained yield and adequate regeneration after exploitation.

CHAPTER II.—SYLVICULTURAL RESEARCH AND EXPERIMENTS.

14. Mr. A. M. C. Littlewood (Deputy Conservator of Forests) held charge of the office of Forest Research Officer throughout the year.

15. The work done by the Forest Research Officer and by Mr. B. S. Kesava Vittal, Extra Assistant Conservator of Forests on special duty in connexion with the silviculture of the rain forests, has been fully dealt with in Parts I and II of the annual report on silviculture. Part III of that report contains details of experiments done by District Forest Officers, and Part IV contains a summary of the working plan operations. A brief resumé of the silvicultural research work done is given below, in paragraph 17 et seq.

Records continued to be maintained on the model which obtains at the Central Forest Research Institute, Dehra Dun. They were periodically reviewed by the Conservator.

16. *Establishment.*—The staff of the Forest Research Officer consisted of two rangers and two foresters, one forest guard and three maistries.

There has been no change in the clerical staff which consists of one clerk and one typist.

17. *Summary of Silvicultural Research conducted by the Forest Research Officer*—(1) *First year tending in teak plantations.*—Work has been in progress at Nilambur for some years on the effect of soil aeration and of reducing weed competition in varying degrees in teak plantations in their first year. The treatment given has varied from a mere cutting back of weeds round the

plants, through forking in circles round the plants and (scraping) in broad belts along the lines, to deep forking in similar lines along similar broad belts. As might be expected the last two methods gave the best results. More unexpectedly it was found that there appears to be little to choose between these last two methods. Both methods have given a marked and almost equal improvement in the rate of growth and general vigour of the plantations as well as a decided prolongation of the growing season. This, and other observations, have led to the suggestion that soil aeration may be secondary in importance to root-competition for moisture. Further observations made during the year lend some support to this view. Repeat experiments are being made in 1931-32 paying the closest attention to the initial comparability of the strips subjected to the different treatments.

(2) *Seed origin experiments—Teak.*—Small scale nursery experiments carried out in the past two years gave indications of earlier germination of seed from localities of heavy rainfall. Experiments at Nilambur, Walayar and Mount Stuart conducted on a larger scale this year with seed from each of these origins were inconclusive.

(3) *Possible unsoundness in teak plants raised from root-and-shoot cuttings.*—Plants whose origin from root-and-shoot cuttings is known with certainty are being sent periodically to the Forest Botanist at Dehra Dun for examination for signs of rot.

(4) *Teak root-and-shoot cuttings on laterite and optimum time and method for planting out the cuttings.*—Suggestive results were obtained from a set of plots in which root-and-shoot cuttings were put out, some in May and some in June, and in each case some in prepared pits and some in scrowbar-holes. Somewhat surprisingly the May planting gave very markedly better results. Pits showed an advantage over crowbar-holes. The rate of growth of these plants raised on lateritic soil from root-and-shoot cuttings compares not unfavourably with that of average nursery seedlings on alluvium.

(5) *Underplanting in teak plantations.*—This investigation has been in progress for some years and the results are summarized in last year's sylvicultural report. Work during this year has been confined to observation of the old plots, and to further experiments with *Chloroxylon Swietenia*, with the Burmese bamboo, *Cephalostachyum pergracile*, and with nursery plants of *Bambusa arundinacea*. The last mentioned gave results of some promise.

(6) *Elephant-grass in teak plantations.*—Arrangements have been made for the study of this problem in 1931-32.

(7) *Teak in mixture on laterite.*—The mixed crop resulting from the treatment described in paragraph 24 of last year's sylvicultural report was tended and measurements were taken. The repeated tending necessary to save the teak in such a mixture from suppression is a serious practical objection to the method of regeneration attempted.

(8) *Re-stocking "gaps" caused by selection fellings in mixed deciduous forest.*—Attempts to stock with teak "gaps" caused by selection fellings in mixed deciduous forest of good quality (but considered unsuitable for clear-felling and artificial regeneration) met with little or no success. The problem is one which calls urgently for solution and arrangements are being made for further work in this direction.

(9) *Strobilanthes.*—There is nothing to add to last year's sylvicultural report on this subject except that the plots in which this weed had been cut continued free of regrowth.

(10) *Root-and-shoot cuttings—Various species.*—The plants raised from root-and-shoot cuttings of *Hopea parviflora*, *Artocarpus hirsuta*, rosewood, *Lagerstræmia lanceolata*, and *Mangifera indica* in the plot referred to in paragraph 116 of last year's sylvicultural report have put on satisfactory height growth, but the casualties during the year in all species have been considerable. New work with root-and-shoot cuttings of *Xylia xylocarpa*, *Albizia lebbek*, *Gmelina arborea*, *Pterocarpus marsupium*, *Schleichera trijuga*, and *Terminalia paniculata* gives promise of success.

(11) *Improvement of poor dry coppice forest.*—No further work was done, but the plots were kept under close observation. No conclusion can be drawn at this stage.

(12) *Seed weights.*—Certain additions to the list are recorded.

(13) *Aids to germination—Teak.*—A very tentative conclusion is that teak seed from localities of heavy rainfall is best used in the year of collection and that from drier climates perhaps improves with keeping. But confirmation is needed. Somewhat suggestive results were obtained by treatment of teak seed with sulphuric acid, following last year's trial of this method with other species. In scarcely any case was the percentage of germination affected adversely by this treatment and in the majority of cases the percentage was increased. In every case germination was hastened by the treatment.

(14) *Flowering of bamboos.*—Information from many parts of the Presidency regarding the years of flowering of *Bambusa arundinacea* and *Dendrocalamus strictus* was collected and recorded.

18. *Summary of silvicultural research in the rain forests of Tinnevely by Mr. B. S. Kesava Vittal, Extra Assistant Conservator of Forests.*—(1) The results and conclusions of the past three years' work show that there is no difficulty in establishing regeneration, at a small cost, about twelve annas per acre of forest, in gaps made in the course of selection fellings, in the evergreen rain forests of Madras. The experiments with the planting of *Mesua ferrea*, *Aglaiia Roxburghiana*, *Chickrassia tabularis*, and *Hopea parviflora* have given good results. In the case of most species no tending is needed in the first year, but in the second and third years freeing the tops of plants is necessary, and in all likelihood slow-growers like *Mesua* will need attention till the fifth year, or even later. The cost of such tending should not exceed four annas per acre of forest per annum for the first three years. A good nursery, properly fenced, is essential and the key-note of success is the collection of seed *at the correct time*. The height growth of natural regeneration already on the ground can be increased by a careful opening out of the canopy.

(2) *Nursery practice.*—Both the covered and uncovered nurseries were maintained and the attack from vermin was entirely checked by keeping the nursery fences in proper repair. The nursery sowings gave satisfactory results. Acid-treated seed of *Acrocarpus fraxinifolius* gave 48 per cent success. Seeds of *Chickrassia tabularis* and *Hardwickia pinnata* collected carefully *at the right time*, i.e., February–March and October respectively, and sown immediately gave satisfactory results. The transplanting of 350 *Araucaria Cunninghamii* ('Hoop pine') seedlings into bamboo baskets was a success.

(3) *Regeneration operations in the forest*—(i) *Artificial regeneration of gaps.*—The artificial regeneration in 1929 and 1930 of gaps caused by selection fellings in Coupes I and II respectively, by dibbling seed and planting seedlings of various species has continued to prove satisfactory. In the case of certain species, viz., *Mesua* and *Aglaiia*, planting had to be resorted to as the seed of the former is attacked by vermin if dibbled, and the seed of the latter species is available at a time of year which is not suitable for direct sowing. In Coupe II seed of *Balanocarpus utilis* dibbled in December 1930 gave 100 per cent success and the plants were four inches high at the end of March 1931. In the gaps of Coupe I, regenerated during 1929–30, the plants of fast-growing species like *Toon*, *Chickrassia* and *Acrocarpus* were freed from weed and shrub competitors. In the gaps of Coupe II, regenerated during 1930–31, no tending was done.

(ii) *Artificial regeneration of unworked forest.*—From the regeneration operations conducted in 1929 and 1930 in an unworked

forest it appears that it is not difficult to get up a sufficient number of seedlings of the desired species by dibbling or planting, or a combination of both. Dibbling is not always to be relied on in the case of certain species whose seeds are either eaten by vermin, or give poor germination, or are available at an inconvenient time. In such cases planting is the only solution. The plants resulting from the 1930 regeneration operations were tended once in 1930.

The seedlings in the two control gaps of 1928–29 fellings were freed from oppressive weeds twice, once in the south-west monsoon and again in the north-east monsoon. The plants were re-measured in March 1931 and they all showed an appreciable increase in height growth. Further observations are necessary before definite conclusions can be drawn.

(iii) The heights of 100 plants in each of the two one-acre plots and the control plot of half an acre, opened in 1929 in the coupe to study the effect of the gradual opening of the canopy on natural regeneration, were re-measured in March 1931. The experiment indicates that the height growth of existing natural regeneration in the evergreen forests can be stimulated by a judicious opening of the canopy of the understorey; considerable further experiment is necessary to determine the optimum amount of light.

(iv) *Miscellaneous experiments.*—(1) The trees of miscellaneous species in the two *Acrocarpus* plots, described in paragraphs 20 and 21 of last year's silvicultural report, Part II, that were girdled, are being kept under observation.

(2) Sawn pieces of timber of thirteen different species were buried in ant-hills and watered. The results in June 1931, a year later, showed that eight of them were badly attacked by white-ants and in the case of the other five no results are available, since the original pieces were removed by coolies and fresh pieces were put down in March 1931.

(3) In a 3-year old teak plantation three plots and three control plots were opened in March 1930 to study the effect on the growth of young teak seedlings of soil aeration and removal of root competition by forking, mamuti scraping and weed-cutting round the seedlings. It is too early to draw any conclusions, but the seedlings in the forked and mamuti scraped plots show that they have certainly benefited by the treatment.

(4) *Regeneration of gaps caused by selection fellings in the Silent Valley of Palghat division.*—In May 1930, 100 gaps were selected at random in Coupe II of the Silent Valley at Neelikal with the object of finding out what percentage of them contained sufficient natural regeneration of the desired species to warrant their

not being taken up for artificial regeneration. Seedlings in the gaps and also to a width of five yards around their borders were enumerated. The enumerations showed that only five gaps were without useful regeneration and no gap was devoid of useful regeneration inside the five yards margin. Established natural seedlings of *Dichopsis* and *Mesua*, i.e., seedlings 9 inches to 2½ feet high, have not suffered to any extent in the smaller gaps, though in the bigger gaps they show signs of withering. In three of the gaps seed of *Artocarpus hirsuta* was dibbled in May 1930 with satisfactory results; and in four other gaps seed of *Dalbergia latifolia* was sown in June and July 1930 with no success.

19. Summary of silvicultural experiments by District Forest Officers—(1) Artificial regeneration—*Acacia cyanophylla*.—Experiments in the artificial regeneration of *Acacia cyanophylla*, a quick-growing drought-resisting species, in dry fuel forests, were continued. Where the species was established height growth was phenomenal, but success in establishing a crop was poor. Future experiments are obviously called for, as the species is most promising, but they should be in the purely preliminary stage in order to make sure of germination and establishment.

(2) *Prosopis juliflora* is another drought-resisting species, which has done well in many tropical countries, into which it has been introduced. It is commonly known in its own home (Mexico) as 'Mesquite'. Experiments carried out in Chittoor, Tinnevely, and Kollegal divisions indicate that there will be little difficulty in introducing it into felled coupes, but here again we should at present confine our experiments to the preliminary stage.

(3) *Shorea robusta* (Sal) in Ganjam.—Experiments to find out the best method of establishing adequate sal regeneration in the Ravine Working Circle, where it is deficient, were started in 1928. It has been found that, given a suitable soil, it is possible to get up in one year abundant seedlings by means of dibbling good, fertile seed at the correct time. But it is still to be seen to what extent these artificially raised seedlings will develop into the 'switch' stage and so become established.

(4) *Pterocarpus santalinus* (red sanders).—Experiments in the artificial regeneration of red sanders were carried out in the Chittoor district by broadcast sowings and putting out basketed one-year old plants, with varying results. Propagation of this species by cuttings was a failure.

(5) *Cephalostachyum pergracile* (Burmese bamboo).—An experiment was started at Nilambur to raise an underwood to teak, of *Cephalostachyum pergracile*, in the 1902 plantation. The experiment was a success and, as this bamboo is small and therefore

unlikely to interfere with teak on any but the poorest soils, it should be more suitable for our present purpose than our indigenous *Bambusa arundinacea*.

(6) Propagation with cuttings.—Experimental planting with cuttings of various fuel and timber species was undertaken in certain coupes of the Chittoor and South Salem divisions. Though many of the species tried their best, and developed buds and shoots, most of them died in the hot weather. *Albizia amara* and *Lebbek* did the best, but it is still to be seen whether even these will weather the summer months and establish themselves.

(7) *Tectona grandis* (teak).—(i) In North Mangalore division teak dibbled in gaps after selection fellings gave satisfactory results, but 50 per cent of the seedlings are forked and it is a question whether this semi-evergreen forest is really suited to teak. At the same time *Xylia xylocarpa* and *Dalbergia latifolia* seeds were dibbled on the borders of the gaps with fair results.

(ii) In Ganjam teak was introduced in two small areas in Coupes I and II of the Ravine Working Circle in 1920 and 1923. In 1929, 12 more or less dominant stems in the 1923 plantation when measured had girths varying from 13 to 17 inches at 4 feet 6 inches and heights from 39 to 45 feet. This plot is prescribed in the revised working plan, which was completed early in 1931, as an observation area, requiring re-measurement every five years.

(iii) In Lower Godavari division from 1921, experiments in the introduction of teak in suitable areas, where it did not already exist, have been carried out in felled coupes, after burning the debris. The results have been satisfactory and dibbling and notching of germinating seed from 'dumps' have given equally good results as planting one-year and two-year old stumps. Results also show that the growth on non-cultivated areas is slightly better than areas that have been cultivated for one and two years.

(iv) In Upper Godavari division in 1929 an experiment to determine the relative superiority of one-year and two-year old teak stumps was started. So far the one-year old stumps have given better results than stumps two years old. But here again it is too soon to say anything definite and further observations are necessary.

(8) *Zizyphus jujuba*.—Experimental sowings with *Zizyphus jujuba* were tried in the Chittoor district with satisfactory results. The seed was sown in patches amongst coppice growth in a felled coupe and, again, right in the open in an inspection shed compound: the percentage of survivals in the hot weather of 1931 in the former area were much greater than in the latter. Better results might have been obtained had the sowings been done on mounds.

(9) *Sandal*.—(i) Various germination tests of sandal were conducted in the North Salem, North Coimbatore, and Kollegal divisions with different objects in view. But the most satisfactory method is to sow the seed, after removing the pulp, under light shade in a 'dump'.

(ii) Experiments in the artificial regenerations of sandal were carried out on a large scale in North Salem; the most successful method tried is to hasten germination by making a 'dump'. This consists of a shallow basin made in the ground containing worked up soil with a layer of sand on top, on which is placed a layer of sandal seed covered with a sprinkling of earth and then covered with straw, which in the nursery is watered on alternate days.

As seeds germinate the seedlings are pulled out and transplanted into the forest together with a suitable host of a slightly larger size, which has been raised in a similar way. The layer of sand is used in order to make it easy to pull out the seedlings without damaging the roots. In North Coimbatore and Madura experiments with the object of raising sandal by sowings with dhal and ragi were undertaken with varying results.

(iii) In Kollegal an attempt to raise sandal plantations in a dry, poor clear-felled area, with fuel species as hosts, met with poor success. The sandal germinated well, but such seedling as may have been established have no hosts to nourish them, since only a fraction of those introduced show any signs of surviving.

(iv) In North Salem sandal stumps from 2½ years old plants have done well and if this method proves a success it will help greatly in getting sandal to establish itself and will constitute a big advance in our knowledge regarding the propagation of sandal.

(v) Field observations in connexion with spike investigation were continued during the year in North and South Salem, Kollegal, Coorg, and Vellore. Ecological surveys and investigations into the insect life of sandal areas were also undertaken.

(vi) In North Coimbatore and North Salem experiments have been started to find out whether by artificially reproducing conditions similar to those on cultivated lands, it would be possible to arrest, control or cure spike disease. No results are available as yet, as the experiments were started only at the close of the year.

(10) Experimental sowings with miscellaneous species were undertaken in several districts.

In Madura seed of *Artocarpus hirsuta* dibbled near Kumili gave fair results, whereas the transplanting of *Hopea parviflora* was a failure. Basketed seedlings of *Chloroxylon Swietenia* put down in a timber area at Vannathiparai gave satisfactory results. Sowings of various timber and fuel species were undertaken in felled fuel coupes in the Madura, North Salem, Tinnevely, and Nellore districts with varying results.

(11) *Natural regeneration—Shorea Talura*.—In Chittoor it has been found that by aerating the soil once in three months round natural seedlings of *Shorea Talura* that come up near old stumps of this species, it is possible to enable such seedlings to develop into saplings and establish themselves.

(12) *Aricemia officinalis (Mangrove)*.—In Guntur experiments show that whenever mangrove forests are protected by a good, strong fence, from cattle and man, the natural regeneration already present improves rapidly.

(13) *Early-burning experiments*.—In North and South Cuddapah divisions experiments to investigate the possibility of early-burning in some of the *Pterocarpus santalinus* (red sanders) forests as a means to save the seedlings and small saplings of this species have been undertaken. It is too early to draw conclusions and further observations are being made.

(14) *Miscellaneous experiments*.—(i) In Upper Godavari, to ascertain the rate of girth increment of individual *Chloroxylon Swietenia* trees, sample plots have been opened in a mixed crop and a pure crop. The general indication at present is that on the better soils the rate of growth is fair; but it is too early to come to a final conclusion at present.

(ii) In the same division four plots to conduct regeneration experiments with *Hardwickia binata* under different conditions of treatment have been opened; no results are yet available.

(iii) In Nellore, three small experimental plots were opened with the object of getting (1) reliable data of the height and girth increment of *Pterocarpus marsupium*, *Pterocarpus santalinus*, *Hardwickia binata*, *Anogeissus latifolia* and *Chloroxylon Swietenia*; (2) to check the rate of coppice growth of these species and (3) to compare the rate of growth of coppice shoots by various methods of treatment.

The plots were opened only in 1928, so no conclusive results have yet been obtained.

(iv) In Kurnool West two experimental plots have been recently opened to find out the best way of regenerating a bamboo in timber forest; and whether by close planting of teak, with

a small admixture of *Pterocarpus marsupium*, it would be possible to suppress weed-growth and minimize fire risk.

(v) In Kurnool South, sample plots in timber and pole areas have been opened to arrive at rates of growth. Also four sample plots have been laid out in a mixed timber forest and in a nearly pure *Hardwickia binata* area to arrive at yield and rate of growth.

(vi) In South Cuddapah the results of an experiment show that the leaves from pollarded *Diospyros melanoxylon* trees are superior in quality to the leaves from non-pollarded trees for 'beede' (native cigarette) wrappers; and that also the yield is higher.

(vii) In North Cuddapah experiments have been started to find out (1) how to get the maximum area of 'rab-sowing' successfully done, with a minimum of slash and debris to burn; and (2) with soil-working and ash and soil mixing, as a part of the regeneration process. The experiments have only recently been started and conclusions cannot yet be drawn.

(viii) The experiment in South Salem to exterminate prickly-pear by means of the cochineal insect has proved successful, though the spread is slow. Further results are awaited.

(ix) In Kollegal an experimental plot has been opened recently to find out the effect of special fire-protection on natural regeneration of teak in poor pole areas subject to fires.

(x) In North Mangalore an experiment has shown that *Strobilanthes* (species unknown) can be destroyed by cutting back to near ground level six months after seeding. Also that not only does the existing natural regeneration of *Xylia xylocarpa*, consisting of seedlings and root-suckers, benefit considerably by the removal of the pest, but that fresh seedlings and root-suckers soon make their appearance in large numbers after the clearance.

CHAPTER III.—ADMINISTRATION.

20. Mr. C. C. Wilson was in charge of the Circle throughout the year.

The following officers were attached to the Circle as Working Plans Officers, Assistant Working Plans Officers and Officers on Special duty:—

Working Plans Officers.

Mr. M. V. Laurie, Assistant Conservator of Forests in charge of the Mount Stuart Working Plans Division, from 1st March 1930 to 20th January 1931.

Mr. M. Kesavanunni Nayar, Deputy Conservator of Forests, in charge of the Ganjam Working Plans Division, from 1st March 1930 to 28th March 1931.

Mr. P. W. Davis, Deputy Conservator of Forests, in charge of the Mangalore South and North Working Plans Divisions, throughout the year.

Mr. C. R. Ranganathan, Deputy Conservator of Forests, in charge of North Coimbatore and Kollegal Working Plans Divisions, throughout the year.

Mr. Ananthanarayana Sarma, Deputy Conservator of Forests, in charge of the Wynaad Ghat Forests Working Plans Division, throughout the year.

Assistant Working Plans Officers.

Mr. T. V. Venkateswara Ayyar, Extra Assistant Conservator of Forests, in charge of the Silent Valley Working Plans Division of Palghat, throughout the year.

Mr. H. E. Brown, Extra Assistant Conservator of Forests, from 6th April 1930 to 24th July 1930 and from 27th August 1930 to 30th November 1930. Attached to Mangalore Working Plans Division.

Mr. M. H. Krishnaswami Ayyar, Extra Assistant Conservator of Forests, from 1st May 1930 to 30th September 1930 and from 27th November 1930 to 31st March 1931. Attached to Mangalore Working Plans Division.

Officers on Special duty.

Mr. A. M. C. Littlewood, Deputy Conservator of Forests in charge of the Forest Research Division.

Mr. R. B. Cornwell, Deputy Conservator of Forests, attached to the Circle office in connexion with the completion of the Mount Stuart Working Plan from 6th December 1930 to the end of the year.

Mr. B. S. Kesava Vittal, Extra Assistant Conservator of Forests in charge of the sylvicultural research into the regeneration and exploitation of the rain forests.

21. The Conservator visited all localities where the preparation of working plans was in progress, and toured in the Upper and Lower Godavari and the Tinnevely Forest divisions, where working plans are urgently required. That for Lower Godavari was taken up towards the end of the year.

He also visited all the areas in which the Forest Research Office (or Provincial Sylviculturist) had opened experimental plots.

22. *Health*.—The health of the establishment was on the whole satisfactory.

The staff suffered from malarial fever to a rather less degree than is usual in the case of men employed on the preparation of working plans; this is due, no doubt, in part, to the careful anti-malarial precautions enforced by the superior staff.

OOTACAMUND, C. C. WILSON,
1st September 1930. Conservator (*Working Plans*), Third Circle.

ANNUAL ADMINISTRATION REPORT OF THE FOREST DEPARTMENT

FOR THE

YEAR ENDING 31st MARCH 1931.

FOURTH CIRCLE

CHAPTER I.—CONSTITUTION OF STATE FORESTS.

1. ALTERATION IN AREA.

Reserved forests and reserved lands.—The total area of reserved forests decreased from 3,836 square miles to 3,834 square miles, chiefly owing to the disreservation of 175 acres in Ambur reserved forest, Vellore division, and to the disreservation of 551 acres in Mallapuram reserved forest for assignment to ryots and 214 acres in Pallipatti reserved forest for assignment to Koravas in Central Salem division.

(ii) *Reserved lands*.—There has been no change in the area of reserved lands during the year.

2. FOREST SETTLEMENT.

2. The settlement of an area of 26.75 acres being admitted patta enclosures in Karuthamalai reserved forest, Vellore division, notified under section 4 of the Forest Act was under progress during the year.

3. DEMARCATION.

3. Rupees 102 was spent in the Chittoor division on white-washing and tar-numbering cairns. In Vellore division Rs. 137 was spent on reclearing and maintenance of boundaries. In North Salem Rs. 124 was spent for demarcating six and a half miles of

reserved forests and Rs. 130 on reclearing and widening the district boundary line between Salem and North Arcot and Kangundi zamindari (Chittoor district). In Central Salem Rs. 233 was spent on demarcation and construction of cairns for 9.77 miles and Rs. 881 on clearing 373¼ miles of lines including top lines. Rupees 1,247 was spent in cutting coupe lines and strip lines including planting of coupe stones. Rupees 20 was spent in demarcating the Thirthagiri reserved land with cairns. Rupees 32 was spent in reclearing the reserve lines of Arana and Thirthagiri reserved lands to a distance of 16 miles. In South Salem Rs. 10 was spent for clearing the base line in the Adukkam-Pudukombai block. The existing boundary lines of reserves were cleared as usual by the protective staff free of cost except the top lines in South Salem which were maintained by Malayalis under the reward system.

4. FOREST SURVEYS.

4. (a) *By the Survey of India*.—In Central Salem the Survey of India Party surveyed part of South Arcot and Salem districts, on 1 inch to a mile scale while the survey of Arana and Thirthagiri reserved lands was done by them on 4 inches to 1 mile scale. In South Salem No. VIII Party commenced its work from December 1930 on topographical survey and dealt with the following reserves and reserved land:—

Vedambium, Veppadi, Vengamudi, Vanjarai, Periasholai, Gundur, Poolambadi, Ariyalur, Atur-Manmalai, Adukkam-Pudukombai, Perumalmalai and Bailnad.

Printed sheets in respect of the above reserves alone have been forwarded by the Officer, Survey Party, for verification.

(b) *By the Madras Survey*.—The resurvey of Omalur and Salem taluks was completed during the year and that of Harur taluk in Central Salem is in progress. In South Salem the party completed the survey of boundaries of reserved forests adjoining patta holdings during their resurvey of Namakkal and Rasipur taluks. The proof copy of Perambalur taluk plan referred to last year is still pending with the Collector of Trichinopoly. The survey of Bailnad, Adukkam-Pudukombai and Perumalmalai reserved lands taken up by the same party during March 1929 was completed after the close of the official year.

(c) The survey of coupes was as usual carried out departmentally.

(d) Reference maps were maintained in all the divisions.

CHAPTER II.—MANAGEMENT OF STATE FORESTS.

1. REGULATION OF MANAGEMENT.

Preparation and Control of regular Working Plans.

(a) Preparation.

5. The scheme sanctioned for the working of the forests in the Odugathur range was taken up for revision first by Mr. A. R. Parasimha Ayyangar, Extra Assistant Conservator, and then by Mr. Abdul Ali Khan, Assistant Conservator. As both of these officers were transferred before they could make any substantial progress the work was kept in abeyance pending the bifurcation of the division. In North Salem, a three-year temporary scheme was sanctioned by the Conservator for working the sandalwood areas. The preparation of consolidated working plans for the Central and South Salem divisions referred to last year was completed during the year in the light of instructions given by the Chief Conservator, the Working Plans Conservator, and the Territorial Conservator, and the Working Plans were sent to the Chief Conservator for sanction shortly after the close of the year.

(b) CONTROL.

The prescriptions of the working plans and schemes were generally adhered to, and the control returns were reviewed by both the Territorial and the Working Plans Conservator. Proper sanction for the deviations from the working plans has been obtained. The extraction of sandalwood was confined to dead trees only instead of dead and dying trees as per prescriptions in the working plan. In Vellore green trees were extracted in unreserved as well as reserved trees in patta lands. The bamboo coupes in Shevaroy's South range, Central Salem division have been given rest for a period of three years from 1929–30 under the orders of the Chief Conservator.

2. COMMUNICATIONS AND BUILDINGS.

(a) Roads and Bridges.

6. Form 29 shows the number and capital value of the roads and bridle-paths including culverts and buildings and wells in each division. All District Forest Officers have certified that all permanent buildings and roads borne on the books of the Forest Department in their divisions with few exceptions have been properly

cared for during 1930-31 and that they have been kept in good repair.

The total expenditure on new works and repairs during the year was Rs. 8,535 and Rs. 17,363 against Rs. 6,025 and Rs. 18,757 respectively in the previous year. The important new works undertaken during the year were :—

Chittoor.—Improvement of Nagapatla-Bhakrapet road to a distance of 9 miles and 6 furlongs.

Vellore.—

(1) Part-construction of a new road in continuation of Kavalur-Vasantapuram road.

(2) Part-construction of Mandaparai-Nadanur road.

(3) Improvements to Gillman road by soiling.

(4) Reducing gradients in Latham road.

(5) Re-alignment of section IV of Attimur-Patrakad road.

(6) Alignment of a bridle-path from Krishnapuram to Kottur.

North Salem.—

(1) Improvement to the ghaut portion of the Anchetti-Kundukotta road and the construction of a causeway.

(2) Improvements to the Hogainkal-Biligundlu road.

South Salem.—

(1) Extension of Pudupatti-Pillayarkoil road beyond Nagapallikinar to meet the boundary of Pudupatti reserved forest.

(2) Improvement to Pudupatti-Pillayarkoil road.

(3) Alignment of a road trace to Kalapanayakanpatti-Nadukombai road from the bridle-path from Nadukombai.

(b) Buildings.

7. The expenditure during the year on new buildings and the maintenance of the existing ones (including the pay of watchers) during the year was Rs. 10,421 and Rs. 13,350 against Rs. 17,414 and Rs. 14,885 respectively in the previous year. The important new works undertaken during the year were :—

Vellore.—

(1) Part-construction of a rest-house at Nellivasal.

(2) Extension of sandalwood godown at Tirupattur.

(3) Construction of a zinc shed in the sandalwood depot at Tirupattur; and

(4) Construction of a latrine to the District Forest Officer's quarters.

North Salem.—

(1) Extension of the existing final cleaning shed and putting up a corrugated zinc pandal in front of the double-lock room.

(2) Construction of latrines for the Denkanikota West Range Officer's quarters and the Aiyur rest-house.

South Salem.—

(1) Construction of outhouses at Kulivalavu.

(2) Paving the Turaiyur Range office floor with Cuddapah slabs.

(3) Paving the Mayambadi rest-house floor with concrete broken stone in mortar; and

(4) Special repairs to the Ranger's quarters at Namakkal.

(c) Miscellaneous.

8. The cost of new works and repairs during the year was Rs. 1,738 and Rs. 215 against Rs. 4,353 and Rs. 417 respectively in the previous year. The chief works undertaken during the year were :—

Chittoor.—Completing the trial shaft for a well at Mittalam.

Vellore.—

(1) Digging a trial shaft at Paramanandal.

(2) Trial boring at Nellivasal.

(3) Further deepening the well in the Tiruppattur rest-house.

North Salem.—

(1) Completion of sinking a well in the rest-house compound at Denkanikota.

(2) Deepening the wells for the inspection sheds at Geratti and Nedugampalli.

South Salem.—Deepening the well at Pudupatti.

3. PROTECTION OF FORESTS.

(a) General protection.

9. The following statement shows the offences registered during the year as compared with the previous year.

Offences relating to reserves dealt with by Forest Officers.

	1930-31	1929-30.
	Number.	Number.
Injury to forests by fire	259	167
Unauthorized fellings	3,781	3,733
Unauthorized grazing	* 901	963
Other offences	* 119	224
	5,060	5,087

The increase under fire was due to the unusually severe hot weather and to incendiarism by graziers, and under "fellings" to a large number of cases of theft of leaf manure detected in South Salem division. The decrease under "Unauthorized grazing" is satisfactory but calls for no special remarks.

10. *Sandalwood cases—Chittoor and North Salem.*—Nil. *Vellore.*—One case of illicit transport of fifteen pieces of sandalwood was charged on suspicion by the local Excise Inspector at Villupuram railway station. The matter was referred to the police who treated it as undetectable. The matter is under correspondence with the Excise Inspector. Besides this five sandalwood cases were detected of which three were prosecuted and convicted, one withdrawn and one compounded. *Central Salem.*—Two cases were reported during the year; one was transport of sapwood billets without property mark, and another was illicit transport of sandalwood. The former was compounded for Rs. 25 and the latter is still pending. *South Salem.*—Six sandalwood cases were detected during the year as against seventeen of last year. Two cases were compounded, three prosecuted and one withdrawn. All the three cases prosecuted ended in conviction. In one case the accused was fined Rs. 10, the offence being theft of two small sandalwood billets. The other two cases were sensational ones and underwent protracted trial in court. In one case the accused was convicted and sentenced to seven months' rigorous imprisonment and in the other, two out of the four accused were sentenced to one year rigorous imprisonment while the other two accused were acquitted. The one case withdrawn appeared to have been foisted on the accused and no material evidence was available to charge him. The two cases reported last year to be pending also ended in conviction.

Liberal rewards were granted in these cases.

* Decrease.

11. *Offences relating to unreserves dealt with by Revenue officials.*—These exclude offences relating to reserves under panchayat management—

	1930-31	1929-30.
	Number.	Number.
Injury to forests by fire	* 2	5
Unauthorized felling	* 2,913	3,283
Unauthorized grazing	* 22	60
Other offences	* 109	126
	3,046	3,474

No convincing reason has been furnished by Revenue officials for the allround decrease.

12. *Cases relating to reserves brought to trial—*

Year.	Number.	Convictions.	Acquittals.	Percentage of failure.
1929-30	564	389	175	31.03
1930-31	2,211	410	1,801	81.45

The large variation is due to the fact that cases settled by the Sub-Magistrate on payment of compounding fees in court which were hitherto shown under B. cases compounded have been shown under A. cases taken to court as per Chief Conservator's orders.

13. *Cases relating to unreserves brought to trial—*

Year.	Number.	Convictions.	Acquittals.	Percentage of failure.
1929-30	155	104	51	32.90
1930-31	265	105	160	60.37

The apparent increase was due to acquittals after payment of compounding fees in court which were hitherto shown under B. cases compounded.

The number of cases settled by the payment of compounding fees in court and acquitted in consequence thereof is given below:—

	Reserves.	Unreserves.
Chittoor	219	Nil.
Vellore	577	107
North Salem	86	19
Central Salem	726	50
South Salem	155	Not known.

Figures in respect of unreserves in South Salem division are not available.

* Decrease.

14. The percentage of offences personally enquired into by the District Forest Officers, Extra Assistant Conservators and rangers is given below :—

	District Forest Officers.	Extra Assistant Conser- vators.	Range Officers.
	PERCENTAGE.	PERCENTAGE.	PERCENTAGE.
Chittoor	1	...	9
Vellore	13	6	5.7
North Salem	3	...	16
Central Salem	1.13	...	2.63
South Salem	2	...	12

The amounts of compounding fees realized during the year in reserves and unreserves as compared with those of the previous year are given below :—

Reserves.		Unreserves.	
1930-31.	1929-30.	1930-31.	1929-30.
37,776	* 38,058	24,647	* 29,655

The instructions issued in G.O. No. 990, Revenue, dated 13th June 1910, were generally followed in fixing compounding fees.

15. *Patrol system.*—The patrol system was not generally in force during the year for want of sufficient numbers of subordinates to be placed on special duty. However in *Chittoor*, special patrols were occasionally organized to detect forest offences. In *Vellore* the Range Officers made surprise inspections for effective protection. In *North*, *Central* and *South Salem* divisions special patrols consisting of beat subordinates were organized and surprise inspections were made under the leadership of the Range Officers. This had the desired effect, resulting in the decrease of offences and the cases detected were promptly dealt with.

16. *Rewards.*—In *Vellore* Rs. 50 was sanctioned for forest subordinates for the detection of a case of illicit cutting of fifteen sandalwood trees in Tiruvannamalai range and Rs. 20 was sanctioned for the detection of a sandalwood theft in *Vellore* depot by the depot watcher. In *Central Salem* Rs. 15 was sanctioned by the Conservator to late Ranger Mr. Sambamurthi Ayyar and Rs. 10 to the tanadar, Kacharoyapalaiyam, for the detection of a sandalwood theft case in Atur range and a further sum of Rs. 37 was sanctioned by the Conservator to Ranger V. Narayanaswami Ayyar and one forester and three forest guards for the detection of a sandalwood theft case in Shevaroy's South range. In *South Salem* rewards amounting to Rs. 137 were disbursed to Police officials, private individuals and railway authorities and another handsome

* Correct figures furnished by District Forest Officers.

reward aggregating to Rs. 180 was sanctioned by the Chief Conservator; Rs. 100 for a Sub-Inspector of Police, Rs. 50 for a forester and Rs. 30 for a tanadar.

(b) Protection from fire.

17. The total area attempted to be protected from fire during the calendar year 1930 was 2,811 square miles of which 2,746 square miles were successfully fire-protected at a cost of Rs. 6,884.

Special protection.—The area under special protection was 1,048 square miles as compared with 1,082 square miles in the previous year. An area of 1,031 square miles was successfully fire-protected during the year against 1,064 square miles in the previous year, the percentage of failure being 1.62 against 2.49 in the previous year. The decrease calls for no special remarks.

General protection.—The area under general protection was 1,763 square miles against 1,759 square miles in the previous year, the percentage of failure being 2.72 against 2.83 in the previous year. The variation is small.

Early-burning.—This operation was not carried out in this Circle as there was no need for it.

(c) Protection from cattle.

18. The total area closed to grazing was 206 square miles out of 2,820 square miles of reserved forests under departmental control. The area opened to grazing to all animals except goats was 2,614 square miles of reserved forests. The number of cattle impounded during the year was 11,574 against 12,069 in the previous year. The decrease was in *North* and *South Salem*.

(d) Protection against injuries from natural causes.

19. *Lantana.*—In *Vellore* uprooting and burning of lantana in 40 acres in Coupe II, Komatteyeri Series, was done at a cost of Rs. 20. In *North Salem* clearing of lantana was done in all the sandalwood coupes in connexion with the enumeration, general tending and extraction of sandal trees. In *Krishnagiri* range, lantana is reported to be spreading rapidly in some of the fuel coupes. A sum of Rs. 309 was spent in uprooting lantana in the isolated lines of the spike experimental plots newly opened for the year. In *South Salem* lantana is spreading on the plateau of the Kollimalais and the spread is encouraged by clearing of jungle growth in unreserves for Ponakad cultivation. It is also getting a foothold in the Pachamalais.

Creeper cutting.—This was done in all sandalwood areas prescribed for the year and in timber coupes in *Chittoor* and *Vellore* divisions according to the prescriptions of the working plans.

Prickly-pear.—The cochineal insect was introduced during the year with a view to eradicate prickly-pear inside reserved forests. Inoculation was effected in almost all the ranges in the Circle. All fuel coupes due for working in the next five years are being treated with cochineal and the process will be repeated until all prickly-pear is destroyed. This is highly important as the eradication of prickly-pear in fuel coupes will facilitate working and should greatly improve prices, besides assisting the regeneration of important species which under present conditions are suppressed. The District Forest Officer, Chittoor, finds that the insect infects more successfully if given shade at the time of inoculation. This can be done by covering the infected part with pieces of healthy prickly-pear. The District Forest Officer, Chittoor, also observes that the species most commonly attacked is *Opuntia coccinellifera* and that the insect which attacks this species does not thrive on *Opuntia dillenii*. He reports, however, having obtained from the Local Fund Department at Gudiyattam a brood which attacks *Opuntia dillenii* very successfully. He has been requested to ascertain where this can be obtained in large quantities so that other District Forest Officers who find that operations against *Opuntia dillenii* are unsuccessful may obtain their requirements.

Spike.—This is dealt with under 'Research and Experiments'—Chapter VI.

Bisons.—Bisons continued their usual damage to young sandal trees in all sandalwood areas where they occur. It is proposed to circumvent this attack in special regeneration areas by making fenced enclosures so small that bison will not consider it worth while breaking into them.

CHAPTER III.—SYLVICULTURE.

SECTION I.—FORMATION AND REGENERATION OF FOREST.

(i) General progress of areas under regeneration.

20. *Chittoor*.—Natural reproduction of sandal was fairly satisfactory in all ranges except Gudiyattam. Natural regeneration of red sanders was generally good.

Vellore.—Natural reproduction of sandalwood was good on the Javadis and in specially favoured localities on the Yelagiris.

Natural reproduction of *Choloroxylon Swietenia* and *Terminalia tomentosa* in Poongulam reserve, Tirupattur range, was specially good.

North Salem.—Natural reproduction of sandal was generally good except in Krishnagiri range, where it is never really successful, and in areas invaded by lantana in other ranges. Sandal is spreading also to the outskirts of the unreserves between Nogalur and Pane reserves and between Thalli and Jowlagiri reserves in Denkanikota West range in spite of the prevalence of spike disease.

Hardwickia binata seeded profusely in Kestur Extension reserve in Anchetti range, this reserve having been closed to grazing on account of fires. This species is very prolific in the Cauvery valley, but it requires strict protection from fires and overgrazing to enable it to establish regeneration.

Central Salem.—Natural reproduction continued to be generally fair in the areas under regular working plans though in the case of fuel coupes of drier areas it was hampered by dense prickly-pear. This, however, is being successfully controlled by the introduction of cochineal insects.

Natural reproduction of *Hardwickia binata* was good in Cauvery range. Reproduction of sandal was good and profuse throughout the division. Sandal is spreading rapidly on the slopes of the Shevaroy and the Chitteris.

South Salem.—Natural reproduction of sandal was generally good. *Pterocarpus Marsupium* does well on the Pachamalais and on the eastern slopes of the Kollimalais, while *Cedrela Toona* thrives in the shola areas of the latter hill range. Reproduction of *Dalbergia latifolia* and *Anogeisus latifolia* was fair in the Pachamalais, the greater part of the reproduction appearing to be from root shoots rather than seed.

(ii) Establishment of reproduction under working plans or schemes (Form 34-A).

(a) Mainly natural.

21. Areas covered by working plans were generally worked under the simple coppice system except three coupes in Mamandur range, Chittoor division, where the system of coppice with standards was in force. Reproduction from coppice shoots in all felled fuel coupes was generally satisfactory except in Palmaner range in Chittoor division, where the advisability of suspending exploitation is being seriously considered.

(b) Mainly artificial.

22. *Chittoor*.—Sandal seeds were dibbled in the sandal propagation plots of the Sandal Regeneration Working Circle; the result were generally satisfactory. Red sanders seeds were dibbled in the two coupes of Mamandur Fuel Felling Series and in one coupe of Tirumalai Fuel Series, with the ashes formed by the burning of refuse, and red sanders regeneration operations were carried out in the compartments of the year of the Timber Regeneration Working Circle of the Mamandur range. It was found that broadcasting gave very poor results; at the end of the year there were no seedlings at all in the coupe in Tirumalai series although germination had been fair. *Acacia cyanophylla* seeds were sown as an experimental measure in Chittoor reserve of Gudiyattam range, Palmaner and Musulimadugu reserves of Palmaner range, Mordana reserve of Gudiyattam range, and Nagapatla reserve of Chamala range. Among the various methods adopted, sowing and planting on mounds with seeds boiled for five minutes produced the best results. The cost of these operations was Rs. 282-9-0. Seeds of *Prosopis juliflora* were sown in Musulimadugu reserve of Palmaner range and Nagapatla reserve of Chamala range in 1-acre plots in felled coupes as an experimental measure. The result was only moderate.

Vellore.—Regeneration by dibbling sandal seeds in blank areas in sandal coupes and in special tending areas was unsatisfactory on the whole as also the regeneration from sowings in 1-acre plots of the special tending areas. Though seedlings germinated profusely they generally succumbed during the succeeding hot weather. The "dumping method" employed in connexion with spike investigation work in North Salem division, is being tried. Restocking of fuel coupes was undertaken as ordered in Chief Conservator's Proceedings No. 4517-30, dated 13th May 1930. Seeds of timber species were collected but sowing is postponed to next year for want of sufficient seeds this year. The work of planting cuttings in one fuel coupe in each range is in progress. Cuttings of *Albizia amara* will be given a fair trial.

North Salem.—Regeneration operations prescribed in the Hosur Sandalwood Working Plan were suspended. Sowings of indigenous timber species were carried out, but the seedlings were retarded by the very prolonged hot weather. The sowings of sandal seeds were carried out in plots; 5,279 seedlings were surviving at the end of the year in the 31 two-acre plots taken up during the year. In the non-sandal areas of Dharmapuri range, for example, Hogainkal, Dasampatti, Galigattam and Garigapatti, sandal seeds were dumped in patches under bushes and seedlings are coming up vigorously even at low elevations. Such areas have been located in the

maps and progress is being watched. A 6-acre plot divided into various sub-plots was opened in October 1929 at Jowlagiri. Hosts were sown in the sub-plots and then sandal was introduced. Sandal sown with *Pongamia glabra* and *Acacia Farnesiana* gave the most promising results as usual. The silviculture of sandal is being studied in this plot which is maintained mainly for spike research work. An experiment has just been started at Jowlagiri and various species have been sown with a view to see whether lantana areas which have been badly burnt can be restocked.

Central Salem.—Sandal propagation was carried out by dibbling seeds in 5-acre plots in Sanniyasimalai reserved forest and in 1-acre plots elsewhere. The germination in 1-acre plots was fair but very few seedlings survived during the severe hot weather of 1931. As a result of the sowings in Sanniyasimalai reserve there were 159 surviving seedlings on 23rd April 1931. *Acacia decurrens* has been established in this reserve though its growth is not very satisfactory in this poor soil. Some of the Shevaroy planters are taking an interest in this species which should do very well on average soils at high elevations.

South Salem.—Sandal seeds were sown in 1-acre plots of all the ranges. The result was moderately successful on the whole, Namakkal range showing the best results. Cuttings of different fuel species were planted during the year. Of these *Albizia amara* and *Albizia Lebbek* have given the best results, particularly the latter.

(c) Afforestation.

23. Nil.

(iii) Plantations and other forms of regeneration not under working plans or schemes (Form 34-B).

24. *Vellore*.—No fresh areas were taken up during the year. A sum of Rs. 5 was spent on thinning teak Acha trees in Amerdi plantation and a sum of Rs. 15 for thinning bamboos in the Ambur tope. The total revenue realized during the year was Rs. 55.

Central Salem.—Artificial regeneration was carried on in the Kurumbapatti palmyra tope, and the undergrowth in Coupe IV, 32 acres, was cleared during the year and palmyra seeds were dibbled. The result was fairly good.

(iv) Tending.

25. General tending was done in all current sandal coupes except in the unreserves included in the coupes in *North Salem* division. The tending consisted of freeing the crowns of sandal by

cutting creepers and overhanging branches of other trees interfering with them. Tending was done along with enumeration in Vellore and South Salem divisions. In addition to the tending of sandal, climbers on other species were cut in the compartments of the year of the timber regeneration series of Mamandur range at a cost of Rs. 306-12-0, cleaning operations were carried out in the felled coupes of 1928-29 and 1929-30 at a cost of Rs. 170-7-0, and cleaning and thinning operations were done in Coupe I of Chittoor reserve at a cost of Rs. 3-12-0.

(v) General.

26. Vellore.—Measurements of heights and girths of trees in the sample plots of Polur and Santhaval ranges were recorded during the year.

North Salem.—Girth measurements of sandal seedlings resulting from the sowings commencing from 1927 are maintained by the respective Range Officers.

SECTION 2.—TENDING OF THE GROWING STOCK.

27. Vellore.—Special tending operations were carried out in the special tending areas, the size of the areas having been restricted to 10 acres as directed in the Chief Conservator's Reference 9151-C-2 of 1929-I., dated 10th December 1929.

CHAPTER IV.—EXPLOITATION.

(a) SYSTEM OF MANAGEMENT.

28. The total area under working plans and schemes during the year was 2,619 square miles; the various silvicultural systems in force are detailed below :—

	Area in square miles.	Percentage to the total area under working plan.
Selection method	692	26.42
Simple coppice	524	20.01
Coppice with standards	38	1.45
Method of improvement fellings	692	26.42
Pastoral method	137	5.23
Unworked or worked with no system.	536	20.47
Total area under working plans ...	2,619	100.00

The difference of 101 square miles between Form 28 and the above figures is due to the overlapping of areas covered by bamboo, sandal and fuel working plans with each other in Vellore division.

The following statement shows the area exploited during the year under the various silvicultural systems in each division :—

Division.	Timber clear-felling.	Coppice with standards.	Simple coppice.	Selection fellings.	Improvement fellings.	Total.
		ACS.	ACS.	ACS.	ACS.	ACS.
Chittoor	..	150	1,315	12,973	..	14,438
Vellore	..	408	1,592	99,478	18,984	120,462
North Salem	..	..	673	..	40,019	40,692
Central Salem	..	..	2,622	4,692	46,505	53,819
South Salem	..	..	333	13,519	16,303	30,155
Total	..	558	6,535	130,662	121,811	259,566

(b) EXPLOITATION BY DEPARTMENTAL AGENCY.

29. Sandalwood was the chief product extracted and marketed departmentally. A quantity of 20 tons 47 quarters of final cleaned dead sandalwood and 8 tons 15 quarters of final cleaned green sandalwood was sold at Vellore against 105½ tons in the previous year; 160 tons 69 quarters of final cleaned dead wood and 34 tons 24 quarters of final cleaned green wood was sold at Tiruppattur against 296¾ tons in the previous year. The total amount realized at both the depots for the aggregate quantity of 223 tons 74 quarters was * Rs. 1,76,194 as against Rs. 5,66,727 for 402 tons in the previous year. The sandalwood sales for this year were first fixed for December 1930 but subsequently postponed to February 1931 at the request of merchants on account of trade depression in foreign markets. Sales were held at Vellore and Tiruppattur on 5th and 7th February 1931 respectively. The Chief Conservator and the Conservator were present at the sales. Owing to general depression of trade abroad there was no competition and even the small quantity sold fetched only half the price obtained last year. In last year's sale, the wood from Tiruppattur depot fetched better prices (Rs. 1,400 per ton) than the wood at Vellore (Rs. 1,358 per ton) but the reverse was the case this year as seen from the statement appended :—

	Vellore depot average price per ton.	Tiruppattur depot average price per ton.
	RS.	RS.
Dead wood	883	766
Green wood	899	800

* Of this sum Rs. 1,74,529 was realized before the close of the year and the balance after the close of the year.

This is the first year in which the entire stock of sandalwood in both the depots has not been sold. A statement showing the stock put up for sale, stock sold, the deficit in delivery and the balance of dead and green sandalwood that remain in both the depots is appended:—

	Stock put up for sale.		Stock sold.		Deficit in delivery.		Unsold stock available in the depot.	
	Dead.	Green.	Dead.	Green.	Dead.	Green.	Dead.	Green.
Vellore ..	T. a. 41 30	T. a. 18 21	T. a. 20 47	T. a. 8 15	T. a. 0 14	T. a. 0 33	T. a. 20 49	T. a. 9 53
Tiruppattur ..	300 13	125 55	160 69	34 23	3 27	1 52	135 77	89 60

Timber.—There are no big timber forests from which timber is extracted on a commercial scale in this Circle and there is not much demand for such timber as is available on the Javadis in *Vellore* and on the Kollimalais in *South Salem*. *Hardwickia binata* in Dharmapuri range, *North Salem* division, is however being tested as railway sleepers. In *Chittoor* 2,874 cubic feet of timber of different species was extracted during the year, the net outturn in dressed logs being 2,313 cubic feet. Of this 2,260 cubic feet was sold to the public for Rs. 3,953. In *Vellore* no departmental operations were undertaken but 90.5 cubic feet was obtained by cutting indicator areas and by thinning trees in Amerdi plantation. Of this quantity and the quantity already in stock, 440 cubic feet was sold, 170 cubic feet was written off as wastage and the balance 710 cubic feet was kept in stock for the construction of a rest-house at Nellivasal. *North Salem*.—The only timber operation was the preparation of *Hardwickia binata* sleepers for supply to the South Indian Railways as samples. Four hundred and forty-nine cubic feet of timber was felled in addition to 533 cubic feet in stock last year. Besides this 750 cubic feet of timber was felled. Of this 240 cubic feet was utilized for departmental works, 499 cubic feet sold to the public in round logs and 8 cubic feet of Acha sleepers and saplings was supplied to the Utilization Officer. In *Central* and *South Salem*, timber required for departmental works was collected.

Fuel—Indicator areas.—The District Forest Officers were not able to report with any precision on the accuracy of the figures recorded by contractors or on the results of checks imposed on them with regard to indicator areas. The following information was however collected.

Chittoor.—The quantity removed from the reserve as estimated on the basis of the indicator area figures was 944,126 cubic feet

while the contractor's accounts show that only 523,523 cubic feet is removed from the reserves. The stacking of fuel by contractors leaves much to be desired and in many cases the fuel is converted into charcoal and the quantity so converted is estimated. This may account for the large variations between the contractor's figures and indicator area estimates.

Vellore.—The fuel obtained from the indicator area was measured in stacks of 81 cubic feet, each stack being taken as equivalent to 1 ton. But the figures furnished by contractors are calculated by cart-loads, 1 cart-load being taken as equivalent to half a ton. The contractors furnish the yield in cart-loads and the check exercised is to see that contractors always issue permits for every cart-load removed so that the number of cart-loads given by the contractors can be taken as correct. But the outturn as given by the contractors and converted as mentioned differs very much in some cases from the outturn obtained from the figures of indicator areas as shown in the statement appended:—

Name of coupe.	Number of tons as reported by contractor.	Number of tons as worked by indicator areas.	Excess.	Deficit.
Usur ..	271	112	..	159
Kylasagiri ..	147	109	..	38
Vellakkal ..	104	64	..	40
Thellai ..	229	252	23	..
Nacharkuppam ..	66	134	68	..
Nayakaneri ..	339	442	103	..
Panankatteri ..	107	157	50	..
Pachakuppam ..	160	310	150	..
Pallipattu ..	218	143	..	75
Asanampet ..	282	300	18	..
Rasimalai ..	87	136	49	..
Nellimalai ..	36	99	63	..
Komiar ..	217	168	..	49

North Salem.—The indicator areas were worked in Krishnagiri range alone. The following is the result of comparison of outturn with the contractors' figure:—

	Bags of charcoal of 56 lb. each per acre.	
	Outturn of indicator area.	Outturn of contractors.
Maharajagadai Coupe I ..	10	10
Maharajagadai Coupe II ..	14	29
Bargur Coupe VII ..	45	34
Nandibanda Coupe VII ..	46	29
Naralapalli Coupe VII ..	56	75

The District Forest Officer states that it has been observed by experience that $6\frac{1}{2}$ tons of fuel yield 1 ton of charcoal or 16 per cent on the gross fuel outturn. The figure usually accepted is 20 per cent.

Central Salem.—The Range Officers were ordered to check and verify the outturn furnished by the contractors with reference to the duplicate of permits submitted by them along with the accounts. The result has not been communicated.

South Salem.—A comparison of the contractors' fuel outturn with that of the indicator areas is given below:—

Name of coupe.	Outturn in indicator area.		Outturn of contractor's working.	
	Yield per acre in cubic feet.		Yield per acre in cubic feet.	
Bodamalai Coupe XX	...	800	...	426
Pudupatti Coupe XXIV	...	543	...	252
Tirumanur Coupe XVIII	...	898	...	115
Mavar Coupe XIII	...	1,240	...	1,619
Gangavalli Coupe IX	...	886	...	837
Karavalli Coupe XVIII	...	955	...	598
Thondamanthurai Coupe VII	...	400	...	149

It is felt that little reliance can be placed on the accuracy of the outturn furnished by the contractors.

Chittoor.—Twenty-one thousand one hundred and sixty-five cubic feet of fuel was collected departmentally. Of this 7,433 cubic feet were disposed of during the year leaving a balance of 13,732 cubic feet at the end of the year. *Vellore.*—Twenty-six thousand seven hundred cubic feet of fuel was collected by cutting coupe lines and indicator areas in addition to 44,000 cubic feet in stock last year. Out of these total stock of 70,700 cubic feet, 600 cubic feet was utilized departmentally for burning bricks, 51,000 cubic feet was sold in auction. In North, Central and South Salem the fuel obtained in indicator areas was handed over to contractors after collecting the cost of felling, billeting and stacking and supervision charges.

Bamboos—Vellore.—One hundred bamboos were obtained in thinning bamboo clumps in Ambur plantation and they were sold during the year. Two hundred and thirty bamboos in *North Salem*, 40 bamboos in *Central Salem* and 285 bamboos in *South Salem* were collected and used for departmental works.

Minor forest produce.—Seeds of timber species including sandalwood were collected in all divisions for cultural operations and for

supply to other divisions. In *Vellore* 273 quarters of divi-divi pods was collected during the year; but there was no demand, and it remained unsold. *North Salem.*—About 31 quarters of washed lac was obtained during the year against 3 quarters in the previous year at an estimated value of Rs. 308. Detailed results of lac operations are given in Chapter VI. *Central Salem.*—A net quantity of $107\frac{1}{2}$ Madras measures of dried coffee berries was collected departmentally from the relinquished Argos coffee estate in the Mallapuram ghaut reserved forest and was sold for Rs. 16. Experimental lac operations were conducted by infecting *Shorea Talura* and *Schleichera trijuga* trees on the Chitteris and 26 lb. of washed lac was obtained. The experiment was a success so far as the lac was concerned, but it involves the sacrifice of potentially valuable timber.

(c) EXPLOITATION BY PURCHASERS.

30. The fuel and bamboo coupes and minor forest produce farms were as usual sold to contractors in all the divisions. Timber trees in timber improvement coupes of Kottur and Poongulam reserves in *Vellore* and in Kottapatti reserve in *Central Salem* were sold standing.

The following statement shows the quantity of major produce and the value of minor produce removed by all agency during the year and in the previous year:—

Year.		Timber in thousands of cubic feet.	Fuel in thousands of cubic feet.	Bamboos.	Grass and grazing.	Other minor forest produce.
RESERVES.				Nos.	RS.	RS.
1929-30	.. .. .	40	1,794	146,873	1,99,220	69,994
1930-31	.. .. .	56	1,314	114,158	1,84,985	49,489
UNRESERVES.						
1929-30	.. .. .	614	498	311	..	96,377
1930-31	.. .. .	673	653	23	1	82,491

The variations are explained in Chapter V.

Form 35 shows the quantities of timber exploited during the year. The quantity shown under sawn or square timber in *North Salem* relates to sawn timber and it represents the net outturn of sawn materials. The statement appended shows districtwar the gross yield of timber, the quantity of logs and poles (timber in

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the rough) the quantity of timber, from which dressed logs were obtained and the quantity from which sawn timber was obtained during the year :—

Districts.	Gross yield (in thousands of cubic feet).	Wastages and Rejections.	Quantities of logs and poles (timber in the rough) (in thousands of cubic feet).	Quantities of logs from which sawn timber was obtained (in thousands of cubic feet).	Quantities of logs from which dressed logs were obtained (in thousands of cubic feet).
Chittoor ..	3	1	..	..	2
Vellore ..	(a)	..	(a)	1	..
North Salem ..	1	..	1	..	..
Central Salem ..	1	..	(a)	..	..
South Salem ..	(a)	..	..	1	2
Total ..	5	1	1	1	..

(a) Less than 500 cubic feet; hence ignored.

31. *Grazing*.—Of the total areas of reserved forests and reserved lands 92.27 per cent was opened to grazing against 93.20 per cent in the previous year. The incidence of grazing in the several districts of the Circle is given below :—

District.	Area in acres.	Cow-unit.	Number of acres per cow-unit.
Chittoor ..	293,760	59,065	4.97
Vellore ..	425,600	112,440	3.79
North Salem ..	352,000	59,741	5.89
Central Salem ..	440,960	119,066	3.70
South Salem ..	160,640	43,969	3.65
Total ..	1,672,960	394,281	4.24

There was a decrease in the number of cattle grazed during the year as compared with the previous year in all the divisions except *South Salem* where there was a slight increase of 215 cow-units. The number of acres per cow-unit available during the year was 4.24 against 3.98 in the previous year. In *North Salem* many herds of cattle from Mysore graze in Madras forests at the ordinary local rates while it is reported that the Mysore Government charge double rates for foreign cattle grazing in their territory. The District Forest Officer is collecting statistics to address Government to reciprocate either by excluding foreign cattle or by charging them enhanced fees.

(d) EXPLOITATION BY RIGHT AND PRIVILEGE HOLDERS.

32. The following statement shows details of free grants utilized by right-holders and free grantees :—

	Timber in thousands of cubic feet.	Value.	Fuel.		Bamboos value.	Grazing value.	Other minor forest produce.	Total.
			In thousands of cubic feet.	Value.				
holders ..	..	RS.	..	..	RS.	RS.	RS.	RS.
grantees ..	17	5,313	..	..	435	1	31	5,780

The system of grazing of cattle by Malayalis under the Forest Village system under the initial deposit of 3 annas per cow-unit in *Vellore* and at 2 annas per cow-unit in *Central Salem* and the distribution of rewards to them for successful protection of reserves against fire continued during the year.

The proposals for revising the assessment of the Salem Kalroyans and Chitteris based on the census taken during the year are pending sanction of the Chief Conservator. In *South Salem* the concession of free grazing granted at the time of forest settlement of the Gundur and Ariyur shola reserves in the Namakkal range and V. Kanapadi extension and Palamalai extension reserved forests in Turaiyur range was not utilized by the Malayalis in spite of the notice published in the District Gazette. The reason for their failure to make use of the concession is reported to be due to their unwillingness to assume responsibility for the protection of the reserves. The Hill village scheme for the Bodamalais awaits the sanction of the Chief Conservator of Forests.

An attempt is reported to have been made during the year in the *South Salem* division to carry out in convenient centres a system of stall-feeding of cattle as suggested in the report on the Royal Commission of Agriculture. Though the advantages were explained to the ryots it is stated that none of them availed themselves of the advantages afforded.

(e) EXPLOITATION BY FREE GRANTEES.

33. *Chittoor*.—393.39 cubic feet of timber, 9,300 bamboos, 111 (2,220 cubic feet) of palmyra trees and 8.13 cubic feet of branch-wood were granted to and removed by free grantees for reconstruction of houses burnt by accidental fires.

Vellore.—Free grants were generally made from unreserves; but a free removal of 2,850 bamboos was allowed from reserved forests for the rebuilding of houses burnt by accidental fire as bamboos were not available in unreserves. Free removal of thatch grass was also allowed. The aggregate value of produce removed by the free grantees from reserves as well as unreserves amounted to Rs. 1,686.

North Salem.—Free grants were chiefly made from unreserves for rebuilding houses destroyed by fire. The aggregate value of the produce consisting of timber, bamboos and grass removed by the free grantees amounted to Rs. 302.

Central Salem.—Two thousand four hundred and forty-four cubic feet of timber valued at Rs. 11,57,489 head-loads of bamboos valued at Rs. 58-12-6 and 750 palmyra leaves valued at 12 annas were utilized by the free grantees from reserves and unreserves for rebuilding houses destroyed by fire.

South Salem.—Free grants of timber, bamboos and minor forest produce to the value of Rs. 1,806 were granted from reserves and unreserves for rebuilding houses destroyed by fire.

CHAPTER V.—FINANCIAL RESULTS.

34. The statement below shows the financial position of the year under report compared with that of the previous year for the circle as a whole:—

			<i>Receipts.</i>	
			1930-31.	1929-30.
			RS.	RS.
Revenue	...	...	* 8,81,091	13,73,375
Refunds	...	...	8,733	10,372
Net	...	...	8,72,358	13,63,003
			<i>Expenditure.</i>	
52-A. Capital	...	...	29,292	31,566
B. Conservancy and works.	...	...	1,40,608	1,35,796
C. Establishments	...	...	4,24,738	4,30,418
S.c.ii. Research	...	...	14,646	...
Total	...	...	6,09,284	5,97,780
Surplus	...	...	2,63,074	7,65,223

* The revenue excludes Rs. 2,535 relating to other circles as explained at the footnote of Form No. 39.

The revenue during the year decreased by Rs. 4,90,645 and the expenditure exceeded by Rs. 11,504 over that of the previous year.

35. The various contributions to the gross receipt of Rupees 3,83,626 are detailed below:—

	PER CENT.
Major produce, Forest Department	*28.83
Major produce, Revenue Department	12.37
Bamboos, Forest Department	12.88
Grazing, Forest Department	20.84
Minor forest produce, Forest Department	6.46
Minor forest produce, Revenue Department	8.68
Miscellaneous items	9.94
Total	100.00

* Of this 19.75 per cent represents revenue from sandalwood.

36. Of the expenditure 6.94 per cent was on exploitation, 21.73 per cent on improvement and upkeep of forest, 65.53 per cent on administration and 5.80 per cent on miscellaneous items.

37. The important variations are explained below:—

RECEIPTS.

(i) By Government Agency.

Sandalwood.—This is the chief item of revenue in this Circle. The revenue realized during the year was Rs. 1,74,529 against Rs. 5,66,727 in the previous year. The decrease has been explained in paragraph 29 of the report.

The quantity sold and the revenue realized during the year as compared with the figures of the previous year are given below districtwar:—

districtwar :—

Divisions.	1929-30.		1930-31.				Revenue.
	Quantity in tons.	Revenue.	Quantity.				
			Tons.	Qr.	Lb.	Oz.	
		RS.					RS. A P
Chittoor		792	0	29	24	0	330 9 10
Vellore	88½	2,20,485	59	16	5	2	46,264 0 3
	64½		*41	74	21	4	34,222 10 1
North Salem	212	2,95,237	100	20	1	11	77,907 10 11
Central Salem	133½	19,316	..	*43	19	0	573 13 1
South Salem	17½	24,150	8	7	13	7	6,126 15 11
Other Circles	5	6,717	10	57	26	2	8,233 2 4
			2	68	24	14	2,534 11 10
Total	402	5,66,727	223	78	23	8	1,76,193 10 3

* Represents green wood.

The difference between the sale amount shown and the revenue realized during the year is due to a portion of the amount being realized after the close of the year and to other items of revenue under this head.

Timber.—The revenue realized during the year was Rs. 4,615 against Rs. 4,939 in the previous year. The decrease which was in all divisions except *North Salem* was due in *Chittoor* to lower prices realized for *Shorea Talura* during the year than in the previous year, owing to general depression of prices in the timber market and in *South Salem* to the giving up of timber operations in the *Namakkal Kollimalais* and to the sale of the existing timber at lower prices for want of keen demand. The variations in other divisions are small.

Firewood and charcoal.—The revenue was Rs. 1,393 against Rs. 1,476 in the previous year. The decrease was in *Central* and *South Salem* and was due to lower prices obtained for the produce during the year in the two divisions and to crediting of an amount of Rs. 50 of *Tirumanur Coupe XVIII* indicator area fuel in *South Salem* in the accounts of 1929-30.

Minor forest produce.—The revenue was Rs. 119 against Rs. 304 in the previous year. The decrease was chiefly in *Vellore* and was due to the failure to sell divi-divi pods collected during the year for want of demand.

(ii) Purchasers—Forest Department.

38. *Timber.*—The revenue realized was Rs. 1,789 against Rs. 2,026 in the previous year. The decrease was in *Chittoor* and *Central Salem* and was due in *Chittoor* to lower prices realized for hair-comb wood during the year than in the previous year and in *Central Salem* to the payment of kist after the close of the year.

Firewood and charcoal.—The revenue realized was Rs. 72,452 against Rs. 64,619 in the previous year. The increase was in all divisions except *Central Salem* and was due generally to better prices obtained. Other causes were the sale of two coupes in *Chittoor* division which were not sold in the previous year, the sale of arrear coupes in *North Salem*, and the leasing out of *Pudupatti* arrear coupes of *XXIII* and *XXIV* left unworked by the previous year's contractor in *South Salem*.

Bamboos.—A sum of Rs. 1,13,827 was realized during the year against Rs. 1,45,667 in the previous year. The decrease was in all divisions except *Chittoor* and was due in *Vellore* to the collection of five instalments during the previous year as it was

the first year of sale of three years' leases against four instalments fallen due during the year. In *North* and *Central Salem* the decrease was due to low prices obtained for coupes on account of slackness of trade. In the coupes sold during the year in *North Salem* the growth was particularly poor. In *South Salem* the decrease was due to the leasing of only two small coupes during the year against the extensive bamboo series in *Malayalapatti* sold last year and to the gregarious flowering of big bamboos.

Grazing and fodder grass.—The revenue during the year was Rs. 1,84,115 against Rs. 1,99,202 realized in the previous year. The decrease was in all divisions except *South Salem* and was due partly to the mortality of cattle in all these divisions. The decrease was also due to the refusal of permits to all villagers adjoining reserves under panchayat management during the months of July and August which are the most important months in the grazing year. There was distress among agriculturists in *Vellore* owing to the fall of prices in markets for agricultural produce. On the other hand there was timely rain in *North Salem* which improved the grazing grounds in the unreserves and in the villages bordering the *Cauvery* river and spared the people the necessity for buying permits for reserves. An area of 12,750 acres in *Perumbalai* reserve in *Cauvery* range of *Central Salem* was disreserved and thus made available for free grazing; this further decreased the grazing revenue.

Minor forest produce.—Rupees 56,951 was realized during the year against Rs. 69,597 in the previous year. The decrease was in *Chittoor*, *Vellore* and in *South Salem* and was due generally to want of export facilities to foreign markets and to the general trade depression. A further fall was due to the non-sale of minor forest produce in *Mamandur* range and the *Amburdrug* stone-quarry of *Gudiyattam* range in *Chittoor*, to the exclusion of *Albizia amara* from the lease of manure leaves in *South Salem* and a poor tamarind crop in the same division.

By purchasers—Revenue Department.

39. *Timber.*—A sum of Rs. 65,811 was realized during the year against Rs. 95,764 in the previous year. The decrease was in all divisions and was due to fewer darkhast assignments during the year.

Firewood and charcoal.—The revenue realized during the year was Rs. 43,450 against Rs. 34,792 in the previous year. The increase was in *Chittoor*, *Vellore* and *North Salem* and was chiefly due to the sale of a large number of withered and windfallen trees, the result of a cyclone in *Chittoor* and *Vellore*.

Bamboos.—Only Rs. 3 was realized in *Vellore* during the year against Rs. 809 in *North Salem* and Rs. 2 in *Central Salem*. This is a fluctuating item.

Minor forest produce.—The revenue realized during the year was Rs. 76,719 against Rs. 95,623 realized in the previous year. The decrease was in all divisions and was due to the failure of tamarind produce in the cyclone-affected area in *Vellore* and to the unfavourable prices realized on account of trade depression in all divisions.

Miscellaneous.

40. *Fines and forfeitures.*—Rupees 3,864 was realized against Rs. 3,860 in the previous year. The variation is small.

41. *Rents of buildings.*—Rupees 8,092 was realized against Rs. 7,341 in the previous year. The increase was chiefly in *Chittoor* and *Vellore*. In *Chittoor* the increase was due to the adjustment during the year of a sum of Rs. 112 recovered on account of arrears of rent of certain buildings from Sayid Abdul Kadar Sahib Bahadur, I.F.S., and also to increased rent realized for the Range Officer's quarters at Mamandur and to the collection of arrears of rent of some other buildings in Gudiyattam range. In *Vellore* the increase was due to recovery of rent for the District Forest Officer's quarters throughout the year. In the previous years it was under construction and was occupied only for a few months.

42. *Other sources.*—The revenue realized during the year was Rs. 75,184 against Rs. 86,604 in the previous year. The decrease was in *Vellore* and *South Salem* and was chiefly due to fewer cases of ponakad cultivation and to sandalwood cases being prosecuted instead of being compounded as in the previous year.

43. *Refunds.*—The actuals during the year was Rs. 8,733 against Rs. 10,372 in the previous year. The decrease was in the three *Salem* divisions and was due to the value of unsold permits with the permit-issuing officers being less than that of the previous year in *North* and *Central Salem* divisions. In *South Salem* the decrease was due to the fact that there were no arrears of avaram bark lease contributions pending adjustment to the District Board, Trichinopoly.

EXPENDITURE.

B. Conservancy and Works.

The important variations are explained below.

44. *I. Sandalwood.*—The expenditure during the year was Rs. 40,814 against Rs. 34,484 in the previous year. The increase

was chiefly in *Vellore* and *South Salem* and was due to the extraction of more sandalwood during the year. Though a large quantity was extracted only a small quantity was sold and that at a very poor price. This accounts for the fall in the revenue.

45. *II. Timber and other produce removed from the forests by consumers and purchasers.*—The expenditure during the year was Rs. 49,345 against Rs. 46,038 in the previous year. The increase was chiefly in *Chittoor* and *Central Salem* and was due to the increased number of reserve watchers entertained during the year in place of forest guards whose posts were abolished as a measure of retrenchment; in *Chittoor* and in *Central Salem* more watchers were employed than last year and the expenditure incurred on cutting indicator areas was debited to this head.

46. *III. Maintenance, repairs, and replacement of stores, tools and plants.*—Rupees 532 was spent against Rs. 1,905 in the previous year. The decrease was chiefly in *Vellore*, *North* and *Central Salem* and was due in *Vellore* to not incurring any expenditure in repairing the sandalwood weighbridge, and the Avery beam scales in *North* and *Central Salem*, efficient repairs having been executed in the previous year.

47. *Works.*—Rupees 31,064 was spent during the year against Rs. 34,890 in the previous year. The decrease was chiefly in *Vellore* and *South Salem* and was due to closer scrutiny of estimate and to restricting repairs of roads and buildings to occasions where they were absolutely necessary.

48. *IV. Conservancy and regeneration.*—Rupees 13,904 was spent against Rs. 13,123 in the previous year. The increase was chiefly under regeneration and was due to carrying out intensive tending operations in sandalwood coupes during the year in *Chittoor*, *North* and *South Salem* divisions.

49. *V. Miscellaneous.*—The expenditure during the year was Rs. 3,342 against Rs. 4,116 in the previous year. The decrease was mainly in *North Salem* under 'Supplies and Services' and was due to transferring the expenditure to 'S.c.ii. Research.'

52-A. Capital.

50. *A. Forest surveys.*—Rupees 1,580 was spent against Rs. 580 in the previous year and the increase was due to the survey of Arana and Thirthagiri blocks in *Central Salem* and to the more rapid progress made in the survey of the proposed blocks in *South Salem* during the year.

51. *B. Organization, improvement and extension of forests.*—The expenditure during the year was Rs. 2,272 against Rs. 931 in the previous year. The increase was mainly under demarcation and was due to the wrong debit of Rs. 1,721 made by the Accountant-General to this head instead of to Forest Surveys.

52. *C. Communications and buildings.*—The expenditure during the year was Rs. 20,922 against Rs. 27,791 in the previous year. The decrease was in all divisions except North Salem and was due generally to postponement of works on account of financial stringency. In Vellore as the workmen and the subordinates suffered a great deal from malaria, progress on road works was not as satisfactory as had been expected.

53. *E. Purchase of stores, tools and plant.*—Rupees 4,518 was spent against Rs. 2,264 in the previous year. The increase was in all divisions and was due to furnishing all rest-houses with furniture to an improved standard.

8. c. i. District Establishments.

Variations.

54. *Pay of Officers—Non-voted*—(1929-30, Rs. 60,705; 1930-31, Rs. 77,188)—*Plus* Rs. 16,483.—The increase was due to a greater number of Imperial officers serving in the circle.

55. *Pay of Officers—Voted*—(1929-30, Rs. 45,790; 1930-31, Rs. 34,450)—*Minus* Rs. 11,340.—The decrease was due to the posting of an officer of the Imperial Forest Service to the charge of Central Salem division and to fewer Extra Assistant Conservators being on special duty during the year.

56. *Pay of establishment—Voted* (1929-30, Rs. 2,36,319; 1930-31, Rs. 2,32,590)—*Minus* Rs. 3,729.—The decrease was due to savings effected by not filling up short leave vacancies.

57. *Allowances—Non-voted*—(1929-30, Rs. 7,941; 1930-31, Rs. 11,504)—*Plus* Rs. 3,563.—Due to the posting of an Assistant Conservator and the payment of transfer travelling allowance and arrears of travelling allowance of the District Forest Officer in Vellore and to the posting of an officer of the Imperial Forest Service as District Forest Officer, Central Salem.

58. *Allowances—Voted*—(1929-30, Rs. 45,820; 1930-31, Rs. 41,670)—*Minus* Rs. 4,150.—Due to less number of Extra Assistant Conservators on special duty, and to posting an officer of the Imperial Forest Service to Central Salem. The decrease was also due to some foresters' posts having been vacant for want of substitutes and to disallowances of fixed travelling allowance, for want of progress in works in Vellore.

59. *Charges payable to Government, departments and others* (1929-30, Rs. 4,096; 1930-31, Rs. 3,372)—*Minus* Rs. 724.—The decrease was chiefly in Central Salem and was due to the posting of an officer of an Imperial Service and consequently the payment of less amount to the Public Works Department in the shape of difference of rent to the District Forest Officer's quarters. The decrease was also due to payment of arrear rent in the previous year.

60. 8. c. ii. *Research—Charges payable to Government, departments and others* (1929-30, Rs. 7,449; 1930-31, Rs. 14,646)—*Plus* Rs. 7,197.—Due to adjustment of subsidy payable to the Indian Institute of Science, Bangalore, and of cost of investigation and staff connected with the entomological survey carried out by the Accountant-General in March final accounts, and transfer of expenditure on entomological survey to this unit from '8. b. Supplies and Services—Miscellaneous.'

The variations under other heads are small and call for no remarks.

CHAPTER VI.—RESEARCH AND EXPERIMENTS.

61. *Chittoor.*—In Chittoor division experiments to discover the best way of regenerating red sanders were continued. Seeds were sown during the period June to August 1930 in areas where mother trees of red sanders exist and the results achieved so far point to August as a better month for sowing these seeds, but whether this is so everywhere has yet to be proved. In areas where red sanders does not exist, cuttings of various girths, i.e., 3 inches, 4 inches, 6 inches and 9 inches were planted 3 feet apart in July to October 1930 but none of these cuttings were alive in May 1931. Plantings followed by weedings promised some success but better results were achieved by putting out and aerating basketed plants of one year old; the average height of 1929 plants is 6½ inches and that of 1930 plants is 4 inches.

As usual four sample plots intended to record the growth of red sanders under various conditions were maintained.

Acacia cyanophylla.—The experiments with this drought resisting Australian species were continued during the year in the Palmaner, Chamala and Gudivattam ranges, and with a slight deviation in Chittoor reserve. In the 1929 plots seedlings were planted at stakes or on mounds to replace casualties, and blanks were sown with seeds treated with sulphuric acid for five minutes or boiled in water for five minutes or soaked in cold water for 48 hours. The results were more satisfactory on mounds and

were at their best in Palmaner range, the biggest plant measuring 7 feet in height and 5½ inches in girth at 2 feet from ground level. Stump plantings from the biggest and smallest plants obtained from 1929 nursery, at an espacement of 6 feet by 6 feet, were tried, but without success. The failure was attributed to the months of June and July being unsuitable for planting in this division, which is more favoured by the north-east monsoon. In a further experiment seeds treated with concentrated sulphuric acid for five minutes were sown at stakes and on mounds, some of which were built over pits excavated and filled in, and others built on plain ground, with the result that mound sowings have always given better results than sowing in prepared patches or furrows. The experiments in Chittoor reserve were a complete failure; this may be due to something in the composition of the soil that does not suit *Acacia cyanophylla* but is more likely to be due to sowing too early.

Prosopis juliflora.—Direct sowings of this species over mounds at an espacement of 6 feet by 6 feet were carried out in August 1930 in Palmaner range and in June 1930 in Chamala range. At the end of April 1931 the percentage of germination in the former was 11 and 4 per cent of the seeds yielded seedlings which were alive at the end of April 1931. In this range the drier the weather the greater the casualties, while in Chamala range the result has been better in a dry locality than in a moist one. In *Central Salem Prosopis juliflora* seeds sown in October 1930 produced no germination at all; possibly the seeds were bad, for weather conditions were not entirely unfavourable. *Sandal seeds* sown on elevations of and above 1,500 feet in May and June 1930 resulted in 50 per cent germination though only 5 per cent survived the hot weather. In *Vellore* experimental sowings of sandal with dholl were carried out at Komattayeri in June 1930, but the results are not satisfactory, there being only a few survivals.

62. *Experiments with cuttings of timber and fuel species*.—In Chittoor in one felled fuel coupe in each range cuttings of 6 feet 6 inches long of species selected from the following:—

Zizyphus jujuba, *Melia indica*, *Terminalia Arjuna*, *Feronia Elephantum*, *Zizyphus xylopyrus*, *Chloroxylon Swietenia*, *Albizzia amara*, *Acacia leucophloea*, *Anogeissus latifolia*, *Hardwickia binata*, *Red sanders*, *Albizzia Lebbek*, *Boswellia serrata*, and *Melia Azadirachta* were planted at intervals during the months June to December 1930, but with very poor results, *Boswellia serrata* in Gudiyattam range being the hardiest. To determine whether Red sanders seeds, from old trees would be more fertile than those from young trees, seeds from a tree of 45 inches girth and from

rees of 20½ inches to 23 inches girth, soaked in cold water for 24 hours were sown in Chittoor reserve on mounds at an espacement of 6 feet by 6 feet in June 1930. The countings so far made show that seeds from seed bearers 14 inches to 16 inches give better results than those from seed bearers 6 inches to 8 inches in diameter. This should be of value in regenerating the Maman-dur and Chamala forests. In *South Salem* cuttings of various species were planted between November and December 1930 with the result that the *Albizzias* (*amara* and *Lebbek*) appeared to give promising results, especially the latter.

63. In *North Salem* sandal regeneration experiments were conducted at Denkanikota under the following heads:—

- (1) Regeneration of sandalwood.
- (2) Dumping method.
- (3) Treatment with concentrated sulphuric acid.
- (4) Transplanting.
- (5) Stump planting.

1. *Regeneration of sandalwood*.—A maximum of 43 per cent of success in germination was obtained with seeds stored up to a period of thirteen months.

2. *Dumping*.—This method has been found to be very efficient, and germination takes place in twenty days compared to the normal germination period of two to three months. Dumping of sandal seeds with the seeds of *Acacia farnesiana* and *Cajanus indicus* has considerably increased the percentage of survivals after the hot weather.

3. *Treatment with concentrated sulphuric acid*.—Treatment with concentrated sulphuric acid has not induced a quicker germination of sandal seeds. Sandal seeds collected in October show a larger percentage of germination than those of the February collection. Sandal seeds soaked in water for a day mostly sink, and after this operation they germinate more readily. Sowing sandal seeds and host seeds together in ridges yielded seedlings in a month and in some cases, these reached a height of one foot in six months.

4. *Transplanting*.—Transplanting of sandal seedlings with various hosts have been successfully carried out both in the field and in pots, the hosts employed being *Acacia Farnesiana*, *Pongamia glabra*, *Cajanus indicus*, *Dendrocalamus strictus*, *Zizyphus jujuba*, *Carsicum frutescens*, *Sesbania aegyptiaca*, etc. The minimum height attained in a year in the case of sandal was 2 feet with *Carsicum frutescens* while the maximum was 6 feet with *Cajanus indicus*.

5. *Stump planting*.—This method of raising sandal has some advantages over the others. *Mandelia suberosa* and various other hosts are being tried.

The dumping method has been found to work satisfactorily in raising timber and fuel species such as *Albizzias*, *Acacias*, *Cedrela Toona*, *Schleichera trijuga* and some *Terminalias*; in many cases the period of germination has been reduced by half.

Aeration of the soil round sandal seedlings is of the greatest importance in assisting growth.

64. Experiments in lac cultivation were continued at Jowalagiri and Deverbetta. At Deverbetta the total quantity of yield obtained from the 3 crops was 2,788 lb. from 510 lb. used. It is observed that the monsoon crop is better than the pre-monsoon or post-monsoon crop and that the pre-monsoon crop is better than the post-monsoon crop, the latter being subject to parasitic attacks and weakened by prolonged hot weather. At Jowalagiri the total quantity of yield obtained from the three crops was 818 lb. from 150 lb. used. It is observed that the yield in the monsoon crop was good being nine times the brood used, but in the pre-monsoon crop though it was seven and a half times the brood used, only 27 lb. was utilized as the major portion of the yield (150 lb.) was said to contain predators. The post-monsoon crop was low due to predator attack and the severe hot weather, 70 lb. yielding only 116 lb. *Schleichera trijuga* brood on *Schleichera trijuga* was quite successful; *Schleichera* brood on *Zizyphus jujuba* was also good—20 lb. of brood lac yielded 45 lb. in Noganur reserve. Development was fair but predator attacks continued very heavy in spite of hand picking. At Deverbetta 6 lb. of *Schleichera* brood obtained from the pre-monsoon crop yielded on only one *Zizyphus* tree a good harvest of 55 lb., i.e., nine times the seed used. In this case the encrustation obtained was very good, thick and continuous. *Zizyphus jujuba* brood on *Zizyphus jujuba* was also successful. *Shorea* brood on *Acacia sundra* yielded good results in Denkanikota reserved forest. Nine pounds of *Shorea* brood resulted in the yield of 45 lb., i.e., five times the seed used. In some cases the encrustation obtained was much thicker than on *Shorea*. *Shorea* brood put on *Dichrostachys cinerea* was also successful.

In *Central Salem* lac operations are being continued. In the monsoon crop 25 lb. of brood lac put on 28 *Shorea talura* trees yielded 37 lb. brood lac: the crop had been heavily attacked by predators and parasites.

65. *Spike disease of sandal*.—Spike is spreading in the Yelagiris, but has not been noticed elsewhere in the *Vellore* division.

No spike is reported from *Central Salem* or *Chittoor*. In *South Salem* spike is still spreading in the Kollimalais and Pachamalais. In *North Salem* field observations and experiments in connexion with spike investigation were continued during the year. The results are as usual recorded in the proceedings of the periodical conferences held at the Indian Institute of Science, Bangalore. No startling discoveries have been made since the last report, but efforts are being made to discover a means of raising sandal resistant to infection. There are indications that leguminous hosts such as *Acacias*, *Albizzias*, etc., render sandal plants more susceptible to infection whereas some other host plants notably *Dodonia viscosa*, *Melia indica*, *Semecarpus anacardium*, appear to impart immunity. It is interesting to note that sandal parasitic on *Feronia Elephantum* has in many cases resisted the disease in heavily spiked areas.

CHAPTER VII.—ADMINISTRATION.

66. Mr. T. Clear held charge of the Circle throughout the year.

Changes in the territorial jurisdiction.—The bifurcation of the *Vellore* division referred to in the last year's report has since been ordered by the Government to be deferred owing to financial stringency. The administration of the *Vellore* and *Central Salem* divisions cannot be satisfactory until the former is bifurcated and the latter is rendered lighter by regrouping and redistributing some of the reserves among other divisions. The bifurcation of the vast and unwieldy range, Odugathur, in *Vellore* division though approved by the Chief Conservator has to be deferred as it was not considered expedient to split it up unless and until the *Vellore* division is bifurcated.

67. *Tours*.—The Conservator toured in all the divisions of the Circle spending more than six months in camp, and issued inspection notes on the forests of *Central Salem* and *South Salem* during the year and on the forests of *Vellore* and *North Salem* after the close of the year. All the District Forest Officers spent more than the prescribed minimum in camp.

68. *Inspections*.—The Conservator inspected all the District Forest offices in the Circle and the result was on the whole satisfactory. The District Forest Officers inspected all the Range offices during the year.

69. *Sandalwood depots*.—Both the sale depots at Tirupattur and *Vellore* were inspected by the District Forest Officer and the result of the inspections was satisfactory. All the forest depots in *North*, *Central* and *South Salem* divisions were inspected by the respective District Forest Officers.

Timber depots.—The four timber depots in *North Salem* were inspected by the District Forest Officer during the year.

70. *Audit.*—The audit staff of the Accountant-General's office inspected the accounts of all the District Forest offices. The result of inspection was reported to be satisfactory.

71. *Vernacular Training School.*—No school was held in the Circle during the year. One forest guard from *Chittoor* and two forest guards from *Central Salem* divisions were however deputed to the school held at Sappal, Palghat division, in the Sixth Circle.

Madras Forest College.—No students were deputed during the year.

72. *Health of establishment and sanitation—Chittoor.*—The health of the establishment in Mamandur range, Chittoor division, was as usual bad till August 1930 when Government sanction was obtained for a rural medical practitioner of Renigunta to visit Mamandur once a week to treat subordinates and villagers who happened to be ill and active measures for the destruction of mosquitoes were undertaken under the Chief Conservator's sanction. From August onwards matters began to improve and the number of people suffering from malaria gradually decreased till by the end of March 1931 there were only a few cases needing treatment. Anti-malarial measures are still being continued vigorously, and a further improvement in general health in the locality is confidently anticipated. *Vellore.*—The health of the executive staff was particularly bad and malaria was very virulent in the Javadis, following an unusually heavy north-east monsoon. There is no much scope in this division to give relief to subordinates by transferring them from malarial to non-malarial areas as practically the whole forest area is intensely malarious. *Central Salem.*—The Chitteris, the Attur Kalroyans and the Shevaroy's North and South ranges are generally malarious. Guinea worm is very prevalent on the hills, especially during the hot weather; step-wells are considered responsible for this; the remedy lies with the District Board in the construction of draw-wells as in the Javadis. In *South Salem*, the health of the subordinates working in the Kollimalais and Pachamalais continued to be very unsatisfactory.

Last year the question of anti-malarial measures in the Kollimalais was raised in consultation with the Director of Fisheries with a view to the introduction of larvicidal fish in the hill streams to free the water from malarial parasites if possible. The preliminary catch was not successful as the mesh of the nets used was not fine enough. The Inspector of Fisheries, Nilgiris, paid a visit to the hills. It was found that there were no larvicidal fish of importance in the waters at present but conditions were considered

to be favourable for the introduction of certain varieties. The subject is under correspondence with the Director of Fisheries. It is to be hoped that the experiment will prove successful.

73. *Casualties.*—In *Chittoor*, one forester and one forest guard died of malaria. In *Vellore*, one forester, one forest guard and one range peon died of malaria and one range clerk committed suicide. In *North Salem*, one range clerk died from tuberculosis. In *Central Salem*, one forest guard and one watcher died of malaria. In *South Salem*, one watcher died of malaria.

CHAPTER VIII.—GENERAL.

1. FORMATION OF AND MANAGEMENT BY PANCHAYATS.

(To include Forest Village System.)

74. No reserved forests were transferred to panchayat management during the year. A portion of Karapet reserve in *Chittoor*, and an area of 720 acres in Mallur reserved forest in *South Salem* were retransferred to the control of the Forest Department during the year.

75. Forest Village system (Class II panchayat).—Nil.

2. MEASURES FOR IMPROVING LOCAL SUPPLIES AND FACILITIES FOR OBTAINING FOREST PRODUCE, WATER-SUPPLY, FUEL, MANURE LEAVES, ETC.

76. (a) *Improvement of water-supply in State forests.*—A trial boring was made at Nellivasal on the Javadis in *Vellore* but after going down 34 feet rock was struck and the boring had to be abandoned without water being found.

77. (ii) *Improvements of water-supply in grazing grounds.*—Grazing of cattle on a single range permit has largely removed the difficulties experienced in watering cattle in grazing grounds. Rupees 33 was spent in *Chittoor*, Rs. 145 in *Vellore* and Rs. 30 in *Central Salem* for improving water facilities in grazing grounds. There was no necessity for expenditure in other divisions owing to heavy rains during the year.

78. (b) *The supply of forest produce to meet the wants of the public.*—The wants of the public were generally met by contractors to whom fuel, bamboo and timber coupes as well as minor forest

produce farms were leased by opening depots in suitable centres. The requirements of the villagers in *North Salem* were generally met from unreserves, mitta forest, and forest under panchayat management.

79. (c) *Supply of manure leaves*.—In *Chittoor*, nine manure-leaf felling series are provided in the revised working plan. Each series is divided into three annual coupes and one coupe in each series is leased out annually. In *Vellore*, removal of specified species on payment of seigniorage was allowed during the year from reserved forest in Odugattur range and proposals for the removal of manure leaves from reserves which are not worked for sandal, timber or fuel were submitted to the Chief Conservator; Government sanction is awaited. In *Central Salem*, the demand was mostly met from unreserves and private forests as well as “Dainchia” (*Sesbania aculeata*) grown on private holdings on a small scale. With reference to G.O. Mis. No. 2268, dated 20th December 1929, opening reserved forests in the Attur range for the supply of leaf manure to the adjoining villages for wet cultivation, arrangements were made for the formation of coupes to be sold in 1931–32. In *South Salem*, the usual supply of manure leaves under the coupe system continued during the year. In *North Salem* there is no need to supply the green manure leaves from reserved forests as most of the lands are under dry cultivation. The few villagers cultivating wet lands grow most of their own manure crop in their fields, obtaining the balance required from unreserves.

80. (d) *Removal of thatch and fodder grass by the public*.—On the recommendations of the Royal Commission of Agriculture in India, the Conservator issued a circular forbidding the inclusion of grass in the list of minor forest produce sold to the public in order to allow free removal from the reserved forest by the public. In *Chittoor* and *Vellore* free removal of thatch grass was permitted as usual from all reserves including fuel coupes closed to grazing. This concession was largely utilized by the public. Grass in Banavaram reserve and Chennur plantation in *Vellore* was leased out to the Military Grass Farms Department on the usual royalty of Rs. 2 per ton.

3. TIMBER AND SANDALWOOD TRANSIT RULES.

81. (i) *Timber Transit Rules*.—These are in force only in *Chittoor* division where they are working satisfactorily. The necessity for introducing the rule in the other divisions, particularly the *three Salems*, is engaging the Conservator's attention.

(ii) *Sandalwood Transit Rules*.—The rules approved by Government are in force, but as they are not as effective as they could be, proposals for revising them have been submitted to the Chief Conservator.

4. JUNGLE TRIBES.

82. The “Hill Village system” continued in force in the hill villages on the Javadis in *Vellore* division, and in the Chitteries in *Central Salem* division. Refunds of grazing fees for the successful protection of reserved forests and maintenance of reserve boundaries under this system and special rewards for protection of reserves from fire made by the respective District Forest Officers in open darbars convened for the purpose according to the degree of protection afforded. In *Central Salem*, it is reported that the system has not worked satisfactorily during the year in three out of the eight reserves under the “Hill Village system.” As a result of bad protection the refund of grazing fee was withheld and the Malayalis have been warned that they may be deprived of the privileges hitherto enjoyed by them and that they will have to purchase permits at 9 annas per cow-unit prevailing in the plains instead of at 2 annas per cow-unit now paid by them and refunded. Similar bad protection on the part of the villagers of Kuthimadavu was noticed in respect of Kuthimadavu reserved forest on the Salem Kalroyans and they were dealt with similarly. In *South Salem* the co-operation of the Malayalis was enlisted under the fire reward system under which they supply labour for departmental works on the hills, and protect the forests against fires. At the time of Conservator's last visit to the Pachamalais during 1930 a deputation of Malayalis asked for extra rights of way in addition to those provided at settlement. As a result of their request three new footpaths in Turaiyur range have since been opened. There have been no further grievances since then except poverty which seems to be chronic in the Pachamalais. The Labour department has held an enquiry in this matter. It was suggested by the Conservator to introduce fruit species from the Kollimalais to ameliorate their condition, but this had to be postponed owing to the present financial position.

The Malayalis form the chief source of labour for all departmental works on the hills. Deserving Malayalis continued to be employed as foresters, forest guards and watchers. In *Vellore*, the elementary schools at Komatteyeri, Veerappanur, Nadanur and Kuttattur are working well. The co-operative society and dispensary intended for Komatteyeri have not yet been started as contemplated last year.

5. MINING AND QUARRYING.

83. *Mining*.—In *Vellore* a licence to prospect for pyrites over 2 square miles in Periamalai reserved forest was granted to Mr. H. A. Golwynne, Madras. In the mining lease of Kurumbapatti reserved forest in *Central Salem*, the lessee did very little work up to 1st June, and he subsequently stopped the work altogether.

84. *Quarrying—Chittoor*.—The stone quarry in Amburdrug was not leased during the year for want of demand. Permission was granted for quarrying on seigniorage rates elsewhere. *Vellore*.—Banavaram quarry was leased out during the year. The lease of Avarampalaiyam quarry continued during the year. Local fund contractors were allowed to remove road metal on payment of seigniorage fees. *Central Salem*.—The quarrying of metal was permitted in Anandavadi reserved forest on payment of seigniorage value for road repairs. Free removal of 4,150 cubic feet of metal from Sanniyasimalai reserved forest for metalling feeder roads on the Shevaroy by a Public Works Department contractor prior to the receipt of G.O. Press No. 780, Development, dated 5th April 1930, was permitted. *South Salem*.—Small quarries in reserves and unreserves are leased out annually by auction sales to meet the local demand. Royalty was charged for other departmental works irrespective of the agency of collection. The concession of free quarrying hitherto allowed to local bodies and other departments of Government has now been withdrawn.

6. LIVE-STOCK.

85. *Elephants*.—Nil.

Other animals.—In *Chittoor* division one bull was maintained by the department for watering the plants in the Whiteside's garden reserved forest and the forest rest-house compound at Palmaner.

7. CIVIL SUITS.

86. *Chittoor*.—The result of the appeal preferred by the Zamindar of Bangarupalaiyam is not yet known. *Vellore*.—Khaji Syed Yusuff Sahib of Chowlur referred to in the last year's report, filed a civil suit in the Sub-Court, Vellore, on 17th July 1930 claiming mandatory injunction to register his property mark. The defence of the suit was undertaken by the Collector under the sanction of the Chief Conservator. The case was posted to 25th March 1931 for trial and then adjourned to 25th June 1931. *North Salem*.—The civil suit of 1929 referred to in the last year's report

for compensation of Rs. 600 was disposed of by the District Munsif, Krishnagiri, who awarded the plaintiff a sum of Rs. 1-7-0 as the value of five pieces of sandal sapwood at firewood rates. *South Salem*.—Three suits were pending disposal during the last year—two in the District Court, Trichinopoly, and one with the District Munsif, Kulittalai. The suits in the Trichinopoly District Court were dismissed with costs. That of the execution petition of the Kulittalai suit was decided in favour of the Government.

8. CONTROL OF UNRESERVED LANDS BY THE FOREST DEPARTMENT.

87. *Vellore*.—The land revenue administration of the Javadi hill villages of Tirupattur taluk has been under the control of the Forest Department for the last thirteen years and its continuance for another year was sanctioned in G.O. No. 2164, Development, dated 5th December 1930. Proposals to extend the land revenue administration throughout the Javadis have been submitted and their sanction is pending the bifurcation of the division. *North Salem*.—The Forest Department exercised partial control over unreserves for the extraction of sandalwood. *Central Salem*.—Unreserved lands remained under the control of the Revenue Department as usual except the Kolagur Kanapadi unreserves which were leased out for bamboo (*Bambusa arundinacea*), avaram (*Cassia auriculata*), and vembadam (*Ventilago madraspatana*) barks and etti (*Strychnos nux vomica*) seed by the Forest Department under the orders of the Collector of Salem. *South Salem*.—The unreserves of the Pachamalais and Kollimalais continued to remain under the partial control of the Forest Department in the matter of—

- (i) regulating ponakkad cultivation;
- (ii) protection and extraction of sandalwood; and
- (iii) leasing out minor produce.

88. The relationship between the Forest and Revenue Departments continued friendly.

ENCLOSURE.

AN ACCOUNT OF THE OPERATIONS AND RESULTS IN EACH FOREST DISTRICT OF THE FOURTH CIRCLE DURING 1930-31.

CHITTOOR DIVISION.

Description.—This division covers portions of the Revenue districts of Chittoor and North Arcot and its elevation varies from about 500 feet to 3,784 feet above sea level. The forests are of a dry deciduous scrub

type for the most part except in Mamandur and Chamala valleys where timber of valuable species is common. In the Palmaner range, which is a continuation of the Mysore plateau, sandal is found in varying proportions although it is young and immature.

2. *Area*.—The aggregate area of the reserved forests in the division is 786 square miles. Of this, 578 square miles are under the management of the Forest Department and the 208 square miles under the control of panchayats.

3. *How the forest division is split up into subordinate administrative charges*—

Ranges.	Number of beats.
1. Chandragiri	9
2. Chamala	10
3. Mamandur	9
4. Palmaner	15
5. Gudiyattam	16
Total ...	59

A staff of 15 foresters, 59 forest guards and 61 watchers helps the five range officers in the protection of reserves and in the execution of works.

4. *Cost of administration—Pay*—

	RS.
District Forest Officer	14,382
Executive, protective and clerical staff	40,838
Allowances—	
Non-voted	1,777
Voted	6,229
Total ...	63,226

5. *Cost under other important heads*—

	RS.
Exploitation	1,065
Improvement and upkeep of forest	21,199
Miscellaneous	3,781
Total ...	26,045

6. *Income from main sources*—

	RS.
Sandalwood	348
Timber	8,874
Fuel	14,537
Bamboos	15,245
Grazing	24,303
Minor forest produce	16,742
Miscellaneous including drift and waifwood	10,837
Total ...	90,886
Deduct refunds	174
Net income ...	90,712

7. *Chief works done in the division*.—Extraction of red sanders (*Pterocarpus santalinum*) and jalarai (*Shorea Talura*) timber from Chamala and Talakona reserves.

The construction and repair of forest roads, buildings and wells.

Introduction of sandal in a systematic manner by establishing propagation centres.

Numerous experiments made to discover suitable species with which to stock dry forests and to test the quality of indigenous species for regeneration purposes.

8. The financial results of the year are given below:—

	RS.
Total revenue	90,712
Total expenditure	89,271
Net profit ...	1,441

VELLORE DIVISION.

Description.—The division comprises the whole of the Javadi Hills of the Eastern Ghats roughly 50 miles long and 30 miles broad with an elevation rising to above 3,200 feet and the northern fringe of the Kalroyans. The territorial jurisdiction of the division extends over most of South Arcot and Chingleput, in both of which districts however all the reserved forests have been transferred to the Revenue Department for panchayat management. The hill forests are mostly deciduous with patches of evergreen belts at higher elevations. Growth is mostly sandal and bamboos with the usual small timber and fuel species at the foot of the hills.

2. *Area*.—The total area of the reserved forests in the division is 1,116 square miles of which an area of 706 square miles is under the direct control of the Forest Department and the balance 410 square miles under the control of the Revenue Department.

3. *How the forest division is split up into subordinate administrative charges—*

Range.	Beats.	Sandalwood series.	Total.
1. Tiruppattur	9	4	13
2. Alangayam	8	1	9
3. Chengam	4	3	7
4. Tiruvannamalai	7	...	7
5. Polur	7	3	10
6. Santhavasal	9	3	12
7. Odugathur	29	...	29
Total	73	14	87

4. *Cost of administration—Pay—*

	RS.
District Forest Officer and his assistants ...	36,144
Executive, protective and clerical staff ...	59,702
Allowances—Non-voted	4,590
Do. Voted	9,582
Total	1,10,018

A staff of 30 foresters, 87 forest guards and 80 watchers helps seven Range Officers in the protection of reserves and in the execution of work.

5. *Cost under other important heads—*

	RS.
Exploitation	17,531
Improvement and upkeep of forest	35,978
Miscellaneous	8,316
Total	61,825

6. *Income from main sources—*

	RS.
Sandalwood	1,74,449
Timber	20,092
Fuel	57,581
Bamboos	71,916
Grazing	45,712
Minor forest produce	46,503
Miscellaneous including drift and waifwood ...	29,001
Total	4,45,254
Deduct refunds	7,028
Net Total	4,38,226

7. *The chief work done in the division.*—The marketing of sandalwood, fuel, bamboos and minor forest produce.

The construction and repairs of forest roads, buildings and wells.

Improvement of water facilities.

Protection and improvement of the forests in general.

The land revenue administration of some of the hill villages is a special feature of the Tiruppattur Javadis where the Forest Department assumed the function of the Revenue Department.

8. The financial results of the year are given below:—

	RS.
Total revenue	4,38,226
Total expenditure	1,71,842
Net profit	2,66,384

NORTH SALEM DIVISION.

Description.—Part of this division (which comprises the whole of Hosur and Krishnagiri taluks and part of the Dharmapuri taluk in the Salem Revenue district) covers a portion of the Mysore plateau which contains large areas of sandalwood forests. The lower areas towards Salem do not contain so much sandalwood, but timber species notably *Hardwickia binata* grow in large quantities, as also the commoner timber and fuel species found in the dry deciduous forests. Bamboos occur in all ranges except Krishnagiri.

2. *Area.*—The aggregate area of the division is 578 square miles of which 567 square miles are under the control of the Forest Department and 11 square miles under the control of the Revenue Department.

3. *How the forest division is split up into subordinate administrative charges—*

Range.	Beats.	Sandalwood series.	Total.
1. Denkanikota East ...	5	5	10
2. Denkanikota West ...	7	2	9
3. Anchetti	8	2	10
4. Dharmapuri	8	2	10
5. Krishnagiri	6	...	6
Total	34	11	45

A staff of 20 foresters, 52 forest guards and 46 watchers helps the five Range Officers in the protection of reserves and in the execution of works. Besides the above there is a research ranger with a supernumerary assistant employed on spike investigation work and the cultivation of lac. There is also an assistant entomologist deputed from the Forest Research Institute, Dehra Dun, to investigate the cause of spike disease in sandal.

4. *Cost of administration—Pay—*

	RS.
District Forest Officer and his assistant ...	13,452
Executive, protective and clerical staff ...	43,551
Allowances—Non-voted ...	3,458
Do. Voted ...	9,747
Total ...	70,208

5. *Cost under other important heads—*

	RS.
Exploitation ...	18,168
Improvement and upkeep of forest ...	35,209
Miscellaneous ...	7,796
Total ...	61,173

6. *Income from main sources—*

	RS.
Sandalwood ...	78,544
Timber ...	5,378
Fuel ...	6,664
Bamboos ...	5,937
Grazing ...	29,374
Minor forest produce ...	18,299
Miscellaneous including drift and waifwood ...	9,029

Total ...	1,53,225
Deduct refunds ...	242

Net Revenue ... 1,52,983

7. *The chief work done in the division.*—The extraction of sandalwood is the chief work done in the division.

The construction and repair of roads, buildings and wells.

Research work in collaboration with the Indian Institute of Science, Bangalore, and the Forest Entomologist, Dehra Dun, is being carried out in order to discover the cause of spike in sandalwood.

Lac cultivation which was started on an experimental measure has developed during the year to an appreciable extent.

8. The financial results of the year are given below:—

	RS.
Total revenue ...	1,52,983
Total expenditure ...	1,31,381
Net Revenue ...	21,602

CENTRAL SALEM DIVISION.

Description.—This forest division covers the Shevaroyis in the centre and the Kalroyan Hills in the north, the north-eastern part of the latter being known as the Chitteris. The southern and western part of the division consists of undulating ground. The higher elevations contain all timber, bamboos and sandal in fair quantities. Sandal is now reaching throughout the division except in Cauvery range.

2. *Areas.*—The aggregate area of the reserved forests in the division 943 square miles, of which 230 square miles are under the control of the Revenue Department and 713 square miles under the control of the Forest Department. An area of 1.19 square miles was disreserved during the year.

3. *How the forest division is split up into subordinate administrative ranges—*

	Ranges.	Beats.
1. Atur ...	...	21
2. Harur ...	...	19
3. Shevaroyis South ...	...	11
4. Shevaroyis North ...	...	8
5. Cauvery ...	...	11
Total ...		70

A staff of 16 foresters, 75 forest guards and 70 watchers helps the Range Officers in the protection of reserves and in the execution of works.

4. *Cost of administration—Pay—*

	RS.
District Forest Officer ...	8,862
Executive, protective and clerical staff ...	44,440
Allowances—Non-voted ...	322
Allowances—Voted ...	6,995
Total ...	60,619

5. *Cost under other important heads—*

	RS.
Exploitation ...	2,225
Improvement and upkeep of forests ...	22,757
Miscellaneous ...	5,038
Total ...	30,020

6. Income from main sources—

	RS.
Sandalwood	6,127
Timber	12,058
Fuel	30,460
Bamboos	15,220
Grazing	61,666
Minor forest produce	20,951
Miscellaneous including drift and waifwood ...	24,924
Total	1,71,406
Deduct refunds	1,478
Net revenue	1,69,928

7. The chief work done in the division.—The work is mainly control of grazing and supply of fuel to Salem town, and the construction and repair of forest roads, buildings and wells. A limited quantity of sandalwood is extracted.

Timber trees in Harur and Shevaroy's South ranges were sold during the year standing to contractors.

8. The financial results of the year are given below:—

	RS.
Total revenue	1,69,928
Total expenditure	90,639
Net profit	79,289

SOUTH SALEM DIVISION.

Description.—The division comprises three main ranges of hills, namely, the Bodamalais, the Kollimalais of Salem and Pachamalais of Salem and Trichinopoly districts—all isolated hill ranges reaching in some places an elevation of 4,000 feet. The higher slope contains semi-evergreen forests with occasional sholas. Sandalwood is common on the plateau and along with streams and slopes up to about 2,500 feet. Small timber and fuel species notably *Albizia amara* occur throughout the lower slopes.

2. *Area.*—The aggregate area of the reserved forests in the division is 411 square miles, of which 256 square miles are under the control of the Forest Department and 155 square miles under the control of the Revenue Department.

3. How the division is split up into subordinate administrative charges—

Ranges.	Beats.
1. Namakkal	9
2. Rasipur	9
3. Thammampatti	12
4. Turaiyur	12
Total	42

A staff of 18 foresters, 49 forest guards and 44 watchers helps the four Range Officers in the protection of reserves and in the execution of works.

4. Cost of administration—Pay—

	RS.
District Forest Officer and his assistant ...	12,998
Executive, protective and clerical staff ...	33,435
Allowances—Voted	8,257
Total	54,690

5. Cost under other important heads—

	RS.
Exploitation	3,319
Improvement and upkeep of forests	17,806
Miscellaneous	4,360
Total	25,485

6. Income from main sources—

	RS.
Sandalwood	8,233
Timber	25,813
Firewood and charcoal	8,054
Bamboos	5,516
Grazing	23,061
Minor forest produce	29,984
Miscellaneous including drift and waifwood.	14,054
Total	1,14,715
Deduct refunds	— 189
Net revenue	1,14,904

7. *The chief work done in the division.*—Control of grazing, supply of fuel, leaf manure, and minor forest produce form the chief work carried out during the year; also the construction and repair of forest roads, buildings and wells. A limited quantity of sandalwood was also extracted.

8. The financial results of the year are given below:—

	Rs.
Total revenue	1,14,904
Total expenditure	80,174
Net profit	<u>34,730</u>

SALEM,
29th August 1931.

T. CLEAR,
Conservator of Forests, Fourth Circle.

ANNUAL ADMINISTRATION REPORT OF THE FOREST DEPARTMENT

FOR THE

YEAR ENDING 31st MARCH 1931.

FIFTH CIRCLE

CHAPTER I.—CONSTITUTION OF STATE FORESTS.

ALTERATION IN AREA.

Reserved forests.—The total area of reserved forests at the close of the year was 3,320 square miles against 3,321 square miles at its commencement, the difference being due in *Madura* to the disreservation of 312·75 acres in the *Kuppuvamadai* reserve for assignment to the depressed classes for cultivation and 21 acres in *Karumalai* reserve for excluding a path and a pen used by the villagers.

The disreservation of the *Honnametti* estate referred to in the last year's report is still awaiting the sanction of Government.

2. *Reserved lands.*—An extent of 6·63 acres—site occupied by the forest buildings in *Kuttalam* reserved forest in *Tinnevely*—was notified under section 4 of the Forest Act.

3. *Forest settlement.*—The settlement of the small block referred to in the previous paragraph is pending with the Forest Settlement Officer, *Tinnevely*.

DEMARICATION.

4. Twelve miles of enclosure boundary in *Kollegal*, 17 miles of reserve boundary in *North Coimbatore* and 17 miles of dis-reserved areas and enclosure boundaries in *Madura* were permanently demarcated at a cost of Rs. 2,516. A sum of Rs. 17 was spent in *Kollegal* on verifying the boundary of enclosures prior

to permanent demarcation, and Rs. 16 in *North Coimbatore* on preliminary demarcation prior to reservation. Fourteen miles of boundary between the reserves and frontier boundary and private forests in *South Coimbatore* were re-cleared at a cost of Rs. 219. Rupees 40 was spent in the same district by the Mount Stuart Commercial Concern on re-clearing the interior boundary between two ranges. Rupees 222 spent in *Madura* on demarcating the area dis-reserved for a dairy farm were recovered from the party concerned. The common boundary between the reserved forest and the Kattalamalai estate in *Tinnevelly* was cleared to a length of two miles but the work was not paid for during 1930-31. Two thousand two hundred and seventy-five miles of boundary lines elsewhere in all the divisions were maintained free of cost by the subordinates.

FOREST SURVEYS.

5. (a) *By the Survey of India party.*—Nil.

6. (b) *Local Surveys.*—A sum of Rs. 30 was spent in *Kollegal* on survey of an area proposed to be disreserved round an enclosure. The survey of coupes and regeneration areas was, as usual, done by the subordinates. The Madras Survey Party No. V, Cannanore, has undertaken the survey of the area on the Anamalais, disreserved for cultivation of plantation products. The work was commenced in January 1931 but is not yet complete.

7. Reference maps were maintained in all the districts and posted to end of March 1931.

CHAPTER II.—MANAGEMENT OF STATE FORESTS.

1. REGULATION OF MANAGEMENT.

Preparation and control of working plans.

(a) Preparation.

8. No new working plan was sanctioned during the year. Out of 3,228 square miles of reserves under departmental control in the whole Circle, an area of 530 square miles is covered by sanctioned working plans; 1,503 square miles by schemes temporarily sanctioned by the Conservator, and 212 square miles by lapsed working plan for extraction of dead sandalwood trees in *North Coimbatore*.

The preparation of a working plan in *North Coimbatore* and in *Kollegal* is still under progress under the control of the Working Plans Conservator. The revision of the plan for the Mount Stuart forests in *South Coimbatore* by the Working Plans Conservator was completed during the year and is awaiting the sanction of the Chief Conservator. A scheme for working the Villony valley in Pollachi range for timber is under consideration, but is not likely to be taken up until the market conditions for timber can improve. In the meanwhile, an investigation of the exploitable stock has been made and an alignment and estimate for a cart-track have been completed.

A start has been made to revise part I of the sanctioned working plans in *Madura* and also to collect statistics for preparation of part I for areas not covered by working plans. A working plan for the pine plantations of Kodaikanal range has been drawn up and is now pending with the District Forest Officer for submission to the Conservator finally.

Tinnevelly.—Part I for a revised working plan for the entire area of all the deciduous forests of the division was prepared by the District Forest Officer but had to be returned to him for revision in the light of certain remarks made on it and it is now pending with the District Forest Officer.

As a preliminary to the preparation of a working plan for the evergreen forests of the division, a stock map was prepared after the close of the year under report, by the Extra Assistant Conservator of Forests placed on special duty for that work.

(b) Control.

9. The prescriptions of the existing working plans and schemes were generally followed except in the following cases:—

Kollegal.—Removal of dry fuel was allowed from old coupes of Araipalaiyam to meet local demand. A fuel coupe at Ellamalam was also worked in addition as an experimental measure.

North Coimbatore.—Felling in five fuel series was behind-hand due to lack of demand, and improvement fellings in Kallar and Jackanari working circles were not carried out being found unnecessary.

South Coimbatore.—Slight deviations as regards the discontinuance of fire-protection in Udamalpet range, discontinuance of burning lantana in Punachi range and the working of Coupes 5 and 7 of Punachi timber working circle were sanctioned by the Chief Conservator.

Madura.—Felling in three fuel coupes was done under the simple coppice system instead of coppice with standards. The annual allocation of coupes in two series has been re-arranged. These deviations were approved by the Chief Conservator.

Tinnevely.—Felling in two fuel coupes was done under the system of simple coppice instead of coppice with standards under proper sanction.

2. COMMUNICATIONS AND BUILDINGS.

(a) Roads and bridges.

10. The expenditure on 'new works' was Rs. 10,428 against Rs. 18,552 in the previous year. The increase in 1929-30 was chiefly in *South Coimbatore* and *Madura*, due to undertaking three fair-weather roads for extraction of timber in the former district and one in the latter district for extraction of fuel.

The chief works undertaken were—

Kollegal—

	RS.
Bridlepath from Uthapium to Madeswaranmalai (2 miles 4 furlongs)	747
Road leading from the old Cowdally-Ponnachi road to Ponnachi rest-house (6 furlongs)	306
Irish bridge at the Muskattyhalla on the Lokanahalli-Bailur road	850
Total ...	1,903

South Coimbatore—

Fair-weather road from Tunnacadavu Ar to Sungam (2 miles 4 furlongs)	6,021
Extension of Nallar cart-track	49
Total ...	6,070

Madura—

Extension of Mulayur road—Compensation for land taken up	430
Construction of Sirumalai-Konapatti road (2 miles)	397
Total ...	827

Tinnevely—

	RS.
Metalling Kalakad-Sivanaperi road up to reserve boundary (6 furlongs) and construction of two culverts	1,628

At the end of the year there were 154 roads and bridle-paths including culverts aggregating a distance of 773 miles built at a cost of Rs. 6,00,375.

11. *Maintenance*.—Expenditure on the repair of 86 roads and bridle-paths aggregating a distance of 542 miles amounted to Rs. 58,261 against 593 miles at a cost of Rs. 44,931 in the previous year. The increase was in *Kollegal* and *South Coimbatore* due to extensive repairs to the ghaut roads to make them fit for heavy traffic throughout the year. The following statement shows the roads maintained both by the Forest and Local Fund Departments and the amount of contribution paid by the latter :—

Districts.	Distance repaired.	Amount spent.	Contribution due.	Amount of contribution paid in 1930-31.	Balance.
	MILES.	RS.	RS.	RS.	RS.
Kollegal	49	7,029	2,608	..	2,608
Coimbatore, North	57	6,693	3,668	1,345	2,323 *
South	14	8,846	3,600	..	3,600
Madura	103	6,984	4,369	4,369	..
Total ..	223	29,552	14,245	5,714	8,531

* Collected after the close of the year.

The condition of the roads is reported to be generally satisfactory.

(b) Buildings.

12. The expenditure on 'new works' and improvements was Rs. 15,826 against Rs. 9,386 in the previous year, due chiefly in *Kollegal*, *North Coimbatore* and *South Coimbatore* to greater number of buildings put up than in the previous year. The chief works executed were—

Kollegal.

	RS.
Subordinates' lines at Chengadi	1,205
Do. Saggiam	1,242
Do. Bandalli	1,211
Do. Kothanur	4,638
Sandalwood godown at Thamarakarai	696
Total ...	8,992

North Coimbatore.

	RS.
Clean-chipping shed at Satyamangalam ...	1,457
Improving the subordinates' lines at Geddesal and Hassanur ...	252
Improving the subordinates' rest-houses ...	76
Total ...	1,785

South Coimbatore.

Completion of the subordinates' lines at Karattur ...	233
Subordinates' lines at Manupatti ...	2,288
Ceiling the Range Officer's quarters, etc., at Waterfall ...	523
Value of timber adjusted for constructing a bazaar at Top Slip ...	165
Total ...	3,209

Madura.

Improving the subordinates' lines at Kukkal ...	77
Improving the rest-house at Virupakshi ...	75
Improving the range quarters at Cumbum ...	589
Conversion of two stables at Kalpatti in the subordinates' lines ...	330
Forester's quarters at Manaparai ...	745
Improvement to the rest-house at Greenhut ...	24
Total ...	1,840

Subordinates' lines at Kombu valued at Rs. 1,040 were dismantled during the year and the double kraal at Lower Punachi valued at Rs. 549 written off being old and unserviceable. Rest-house at Chinnasurli valued at Rs. 1,225 was sold as being not useful to the department and the subordinates' lines at Kalpatti written off. Subordinates' lines at Mavathur valued at Rs. 940 were dismantled as unsafe for occupation. Rest-house at Sirumugai valued at Rs. 550 was transferred to the Revenue Department.

13. There were 405 buildings at the close of the year valued at Rs. 5,57,118 and their cost of maintenance was Rs. 12,426; roughly two per cent of the capital cost.

The condition of the buildings was reported to be fairly satisfactory at the close of the year.

(c) Miscellaneous.

14. The expenditure on new works and on repairs were Rupees 1,475 and Rs. 1,744 respectively against Rs. 161 and Rs. 915 in the previous year.

The chief items of new works were:—

	RS.
Construction of an open channel for the supply of water to the rest-house at Geddesal ...	437
Deepening a well at Ponnachi ...	15
Extension of the telephone line from Anaipadi to Sungam (2 miles 3 furlongs) ...	534
Construction of a well at Vannathiparai ...	489
Total ...	1,475

Expenditure on maintenance consisted of repairs to existing wells and maintenance of the existing telephone line. A telephone linesman was employed in *South Coimbatore* throughout the year at a cost of Rs. 504.

There were 93 wells, one telephone line and an open channel representing a capital expenditure of Rs. 28,985 at the close of the year. Twenty-seven wells were repaired at a cost of Rs. 410 and a telephone line maintained at a cost of Rs. 256.

3. PROTECTION OF FORESTS.

(a) General protection.

15. The following statement shows the offences registered during the year as compared with the previous year:—

Offences relating to reserves dealt with by Forest Officers—

	1930-31	1929-30
	RS.	RS.
(1) Injury to forests by fire ...	238	174
(2) Unauthorized fellings ...	2,335	2,398
(3) Unauthorized grazing ...	583	533
(4) Other offences ...	113	102
Total ...	3,269	3,207

The figures show an increase under all items except (2) which shows a slight decrease. Under injury to forests by fire, the increase was chiefly in *Kollegal* and *Madura* attributed to graziers. The

suggestion to close areas to grazing on account of extensive fires in two sections was turned down by the Collector, in one instance as there were not sufficient areas to meet the grazing needs, and in another instance the closure, it was thought, would cause bitter discontent. The increase under unauthorized grazing was noticeable in *Kollegal*, *North Coimbatore* and *Madura*. In *Kollegal*, it was due to greater vigilance on the part of the protective staff in booking offences in closed areas. In *North Coimbatore*, a surprise inspection by the Range Officer, Bhavani, and his subordinates resulted in the detection of 34 cases involving 1,722 head of cattle. *South Coimbatore* shows an increase of ten cases under 'other offences.'

16. *Cases old and new dealt with during the year.*—Of the 2,006 cases taken into court including the old ones, 706 ended in conviction, 883 in acquittal, leaving a balance of 417 pending with magistrates at the close of the year. Of the 883 acquittals, 30 were acquitted after trial, 851 treated as acquittals as compounding fees were paid, and two withdrawn. Rupees 8,070 were collected as compounding fees in court. Punishments awarded by magistrates are reported to be adequate in *North Coimbatore* and *Madura*. In *Kollegal*, out of 33 cases taken into court, 23 were tried in *Kollegal taluk* and 10 in *Bhavani*. In the former, 12 cases ended in acquittal, i.e., 52 per cent which was very unusual. In *Bhavani* all cases ended in conviction. In *Madura* out of 1,302 cases taken into court 501 were convicted and 523 acquitted. Of these latter, 510 were acquitted on payment of compounding fees. The large number of cases in which the compounding fees were paid in court indicates a tendency on the part of the miscreants to draw the forest subordinates away from their beats unnecessarily and it is reported that this has been taken to the notice of the District Magistrate. Rupees 37,154 were realized as compounding fees against Rs. 42,525 in the previous year.

Offences relating to unreserves dealt with by Revenue officials.—The following statement shows the offences registered during the year and the previous year:—

	1930-31	1929-30
(i) Injury to forests by fires	5	17
(ii) Unauthorized fellings	993	1,228
(iii) Unauthorized grazing	38	20
(iv) Other offences	150	265
Total	1,186	1,530

During the year there was a decrease under all the heads except item (iii) where there was a slight increase. Of the 231 cases taken into court, 96 ended in conviction and 91 in acquittal.

17. The percentage of offences personally enquired into by the District Forest Officers and Range Officers is given below:—

Division.	Percentage.	
	District Forest Officer.	Range Officer.
Kollegal	13	13
Coimbatore, North	0.4	15
Do. South	...	13
Madura	0.3	6
Tinnevelly	2	7

18. *Rewards.*—An amount of Rs. 63 was distributed as rewards to two forest guards, two watchers and four private persons in two forest cases; one of which was a case of illicit hunting and the other of timber theft.

19. *Patrol.*—Suprise inspections and secret patrols were arranged in three divisions and the results were satisfactory. Eight such inspections were made in *Kollegal* resulting in detection of 20 cases involving 142 accused, and 75 inspections in *Tinnevelly* resulting in detection of over 31 cases involving 442 head-loads of fuel and 191 head of cattle. In *North Coimbatore* surprise inspections made by two Range Officers resulted in detection of cases, involving illicit removal of fuel, which were compounded for Rs. 202, and 34 grazing cases, involving 1,722 head of cattle, which were compounded for Rs. 1,981-8-0. The usual notice of warning to the public against setting fire to reserved forests was published in the District Gazettes.

Sandalwood cases.—In *North Coimbatore*, four sandalwood cases were detected, two ended in conviction and confiscation of the seized produce, and two were compounded for Rs. 35. In *Madura*, there were three petty cases of cutting sandalwood pieces. Of these, two were compounded and one ended in conviction and confiscation of the seized produce. A case of sandalwood theft was detected in *Tinnevelly* and compounded for Rs. 29.

(b) *Protection from fire (Calendar year 1930).*

20. *Special protection.*—The area attempted to be specially protected by a system of fire-lines and fire patrols was 248,894 acres against 264,847 acres in the previous year, and the cost of protection was Rs. 4,963 against Rs. 4,634 in the previous year. The increase was chiefly in *South Coimbatore* due to areas of teak plantations added annually, and to putting out accidental fires.

An area of 238,394 acres was successfully fire-protected during the year against 261,522 in the previous year, the percentage of success being 95 against 98 in the previous year.

21. *Kollegal*.—The sandal areas were specially protected by burning the grass from the outer edges, over an area of 17,984 acres at a cost of Rs. 457 and no fire occurred in this area. The Kollegal-Mysore frontier boundary was cleared and burnt over a distance of 19 miles at a cost of Rs. 190 and the taluk boundary over a distance of six miles at a cost of Rs. 55. A distance of $5\frac{1}{2}$ miles round Ponnachi shola and 14 miles of path was cleared at a cost of Rs. 35.

North Coimbatore.—The sandal areas in Mettupalaiyam range were specially protected at a cost of Rs. 134, the system adopted being cutting and burning of grass and other growth in the fire-lines to a width of 30 feet. Elsewhere in the division early burning was done at a cost of Rs. 288 over an extent of 25,640 acres against 17,600 acres in the previous year. The grass areas round the sholas in the Minchiguli valley were also early burnt and the sholas protected from late fires.

South Coimbatore.—Besides the early-burning of grass around the sholas in the grass hills, the regeneration areas, timber depots and buildings in Tunacadavu and Punachi ranges were fire-protected at a cost of Rs. 1,777.

Madura.—Besides the fire-protection of the pine plantations and the Ampthill downs, the Surli plateau under the Surli scheme was also brought under special protection. The result may be said to be satisfactory on the whole except in the southern slopes and Perumal-malai in Kodaikanal range. Action has been taken to close the latter reserve to grazing for two years.

Tinnevelly.—The system of fire-protection by fire patrols was continued and the cost of employment of fire patrols amounted to Rs. 381. Early-burning is not followed in this division.

22. *General protection*.—The area under general protection was 1,637,667 acres against 1,623,452 in the previous year, and the area burnt 68,479 acres against 47,456 in the previous year. The number and origin of fires are compared in Appendix A.

The worst fires occurred in the Thattavadi and Minchiguli valleys where the sword grass grows to a height of 12 feet. No serious damage to tree growth has been reported. A new settlement has been opened at Minchiguli and it is hoped that fires will gradually diminish in this area.

23. The average cost of special and general protection was Rs. 9-14-10 and Rs. 8-11-0 per square mile attempted.

(c) *Protection against cattle.*

24. The total area closed to grazing was 641 square miles out of 3,228 square miles of reserved forests under departmental control, against 582 square miles in the previous year. Two square miles were closed to grazing for part of the year in *Tinnevelly* against 10 square miles in the previous year. The area opened to grazing for all animals, except goats, was 2,371 square miles against 2,478 square miles in the previous year. The difference was chiefly in Kollegal due to closures of agricultural implements and fuel coupes worked during the past five years. Nine square miles of reserves in *Tinnevelly* and 195 square miles in *Madura* were kept open for all animals except sheep and goats for part of the year. The number of animals licensed to graze on payment was 242,633 against 246,493 in the previous year. The decrease was generally in all divisions due to cattle mortality which has been ascertained. The number of cattle impounded was 9,454 against 7,389 in the previous year and 10,510 the average of three years ending with 1929-30; the increase was mainly in *North Coimbatore* due to 1,357 head of cattle being impounded by the Range Officer, Bhavani, on surprise inspections of reserves, and partly to less number of cattle rescued.

25. The following statement compares the revenue and incidence of grazing during the year under report with those of the previous year:—

Divisions.	Grazing revenue.		Difference.	Incidence : acres per cow unit.	
	1929-30.	1930-31.		1929-30.	1930-31.
	RS.	RS.	RS.		
Kollegal	47,192	45,614	— 1,578	6	6
Coimbatore, North	37,823	37,483	— 340	8	7
South	4,830	4,634	— 196	12	12
Madura	26,964	24,478	— 2,486	8	9
Tinnevelly	7,442	8,426	+ 984	6	5
Total	1,21,251	1,20,635	— 3,616	..	..

(d) *Protection against injuries due to natural causes.*

26. Fresh attacks of 'spike' were noticed near Bailur in *Kollegal* and no protective measures are known to arrest its progress. The sandal areas in divisions other than *Kollegal* and *North Coimbatore* continue to be spike-free.

27. *Weeds and climbers*.—Climber-cutting and weeding were done in the felled fuel coupes in *South Coimbatore* at a cost of

Rs. 691, climber-cutting in Coupes 9 and 16 of Punachi Working Plan at a cost of Rs. 99; and in the teak plantations wherever necessary.

Tinnevelly.—In *Tinnevelly*, climber-cutting in 6-year old coppice coupes was done at a cost of Rs. 206 in two ranges.

28. *Prickly-pear and lantana.*—Prickly-pear is being successfully got rid of in all the divisions through the agency of the cochineal insect. *Lantana* continues to spread in Punachi and Tunacadavu ranges of *South Coimbatore*. The burning down of lantana, which was done in some of the timber coupes of Punachi range (*South Coimbatore*) at a cost of Rs. 50, does not appear to have had the desired result. *Strobilanthes* is uprooted in *Tinnevelly* by contractors while working fuel coupes.

29. *Damage by animals.*—Elephants continue to do considerable damage to teak in Vannathiparai (*Madura*), in the Alagarkoil valley (*Tinnevelly*); and in some of the Mount Stuart plantations (*South Coimbatore*). In the last division, the damage was, to some extent, reduced by digging deep pits round the 1919-26 plantations. Sambhur and deer also do a great deal of damage to young teak in Kalakad and Mundanthorai (*Tinnevelly*).

30. *Damage by rain and floods.*—Heavy floods in the Bhavani caused some damage to the tree-growth in Mettupalaiyam range of *North Coimbatore* district.

CHAPTER III.—SYLVICULTURE.

SECTION I.—FORMATION AND REGENERATION.

(i) *General progress of areas under regeneration.*

31. *Kollegal.*—Operations for the propagation of sandal in portions of Doddasampagai, Madeswaranmalai, Chikkailur and Yedayarhalli reserves were continued, but with very indifferent results. Two experimental plots for raising sandal with cereal crops—ragi and dhal—were opened and 4,500 patches sown. An enumeration on 13th March 1931 showed that the number of patches containing sandal seedlings was only 2,041. A sum of Rs. 164 was spent up to date. The results are not encouraging. The coupes opened for the supply of agricultural implements to the rural population remained closed to grazing for five years from the date of their working, but in view of the fact that the coupes were seldom worked properly, owing chiefly to the absence of the class of timber required for the purpose, and as the closure of the area appeared most unjustified in the absence of any regeneration

ellings in them, the coupes were ordered to be thrown open to razing as a result of the Conservator's inspection after the close of the year.

North Coimbatore.—Regeneration of sandal in all the sandal areas is reported to be fair. In the South Bargur reserve, sandal is said to be spreading southwards towards the slopes and the plains. Enumeration in the Palamalais showed the existence of 23,564 rees of different girth—classes and the locality, so far, has been free of 'spike' disease. Regeneration of other species, such as *Dalbergia latifolia* and *Pterocarpus Marsupium*, is reported to be good in Thattavadi and the Minchiguli valley, while that of *Anogeissus latifolia*, *Chloroxylon Swietenia* and *Albizia amara*, is said to be fair elsewhere in the division.

South Coimbatore.—The year was a good one for teak, vengai, karimarudu and pillamarudu, bad for rosewood and fair for other species. Natural regeneration of teak in Punachi range was not satisfactory, but of rosewood and vengai under mother trees was appreciable, and of rosewood by root suckers fair. Natural regeneration from seeds outside the felled coupes in Pollachi range was not so bad as that of last year, presumably on account of good rains during the last north-east monsoon. In the felled coupes, there was no germination due to growth of weeds and thorns. Reproduction by coppice shoots was satisfactory in three coupes and fair in two others. Natural regeneration is poor in the Udamalpet range due to low rainfall and rocky and steep nature of the soil. Natural regeneration of sandal in Thalini, Yelumalayancoil and Karumalai forests was satisfactory.

Madura.—Sandal regeneration in Vellaparai, Coupes III and IV of Kombai series, was very fair and promising, and that in Sathiar Sirumalai East and North-east slopes of Sholavandan range very good. Adjoining the Ammayyanayakanur zamindari from a place called Vadagadu up to the point called Chakkaliam Kuttu the regeneration was excellent, and large patches of sandal growth have established themselves and the species is reported to be spreading fast. Sandal in Perumalmalai, Alagar Hills and Karandamalai reserves were enumerated. Natural regeneration of *Shorea Talura* in the Suruli plateau is reported to have been very good during the year and so is that of *Dalbergia latifolia*, *Tectona grandis*, and *Pterocarpus Marsupium* in the eastern and southern portion of the Suruli plateau, in the timber areas in Vannathiparai and in the Amaravathi forests of Surunganur and Melagudalur reserves. The higher slopes of Sirumalai contain a fair percentage of timber species and among these there is a fair amount of natural regeneration of *Albizia Odoratissima*, rosewood and

Pterocarpus Marsupium. In the Natham range, the natural regeneration of *Albizzia amara*, *chloroxylon* and *Albizzia Lebbek* is reported to be fair.

Tinnevely.—There is a compact block of about 3,000 acres in the Alagarcoil valley more or less densely stocked with sandal and all age classes are represented up to a girth of over 35 inches. In the valley, there is another block of about 2,250 acres on the outer fringe but natural regeneration is generally poor everywhere. In the Kuttalam range, however, where an extent of about 220 acres is covered with sandal in the Kuttalam reserve, not only is the natural regeneration very good, but also the species is spreading fast into the adjoining area of the reserve.

(ii) Establishment of reproduction under working plan or schemes.

(a) Mainly natural.

32! Coppice growth in fuel coupes of *Kollegal* is very slow due to poverty of the soil and in *North Coimbatore*, and *South Coimbatore*, satisfactory in all the felled coupes except in some coupes of *Mettupalaiyam* range.

Tinnevely.—Regeneration from coppice shoots has been generally satisfactory and that from seed poor. Teak, rosewood, *Pterocarpus Marsupium*, *Albizzia Lebbek* and *Albizzia amara* are found in fair abundance in the lower slopes of the reserves of *Srivilliputtur* range.

Madura.—Regeneration of rosewood is good and of *Adina cordifolia* under the Vannathiparai scheme and of *Albizzia amara* in the fuel coupes fair.

(b) Mainly artificial.

33. *Kollegal*.—The dibbling of sandal on stream banks and other favourable localities in small beds of 10 feet by 10 feet was, as usual, carried out with the object of establishing small groups of propagation centres. But the volume of work done has not been adequate nor the results satisfactory except in parts in the neighbourhood of *Bylore*.

South Coimbatore.—An area of 103 acres was selected in accordance with the prescriptions of the revised working plan awaiting sanction, clear-felled, burnt and re-burnt. Of this, six acres were handed over to the Forest Research Officer for his experiments and the balance formed the 1931 regeneration area. This

area was dibbled with teak at the end of March and completed in April 1931. The reburning was done under the personal supervision of the District Forest Officer.

Regeneration area, 1930 (224 acres).—The plantation was largely a failure for want of timely rains during the south-west monsoon. It was re-formed and all failures replaced by seed and generally weeded. The Taungya cultivation in the 15-acre plot was a failure.

Regeneration area, 1929 (151 acres).—This plantation has generally done very well. The whole area was tended (climbers cut and soil worked where needed). About 60 acres were accidentally burnt in March 1931. The damaged plants were at once cut back, and the resulting coppice shoots are coming up well.

Regeneration area, 1928 (144 acres).—A part of this was burnt in March 1930. Damaged plants were cut back and the resulting coppice shoots are reported to have come up very well. The area was weeded and pruned. Teak in the paddy area of 35 acres is not as successful as elsewhere.

Regeneration area, 1926 (251 acres).—This plantation is very much subject to damage by wild elephants.

Regeneration area, 1924 (226 acres).—A good plantation.

Regeneration area, 1920 (8 acres).—This plantation was a failure and written off.

Gap regeneration.—A beginning was made with artificial regeneration with valuable species in gaps caused by the removal of mature trees in selection fellings. Natural regeneration is usually not sufficient to restock gaps. Fifty-six gaps were selected, cleared, burnt and re-burnt in the 100 acres of selection-felled area of 1930. The gaps were prepared in time to allow of the dibbling of seed to be done early in April. The cost was Rs. 362. This is in accordance with the prescriptions of the revised working plan.

Formation of nursery.—One hundred and seventy-eight beds each 48 feet by 4 feet were formed during the year at a cost of Rs. 128 for supplying teak stumps for planting in 1932.

Punachi range—Regeneration area, 1931 (25 acres).—An extent of 25 acres was cleared and burnt in Periodic Block I for the formation of Regeneration area, 1931 at a cost of Rs. 169. The area was dibbled in April 1931.

Regeneration area, 1930 (25 acres).—This area was dibbled in May 1930. The total cost was Rs. 200. The germination was not appreciable as regards teak. The area was weeded and failures replaced in August 1930 and the result is reported to be promising. Regeneration of rosewood was good.

*Regeneration area, 1929 (25 acres).—*Weeding and replacing of failures were carried out in August 1930.

*Regeneration area, 1926-28 (50 acres).—*Weeding and tending was done in August and November 1930.

*Regeneration area in Compartment 14-a.—*Teak seeds were dibbled and the area weeded in July and November 1930 at a cost of Rs. 21, and casualties replaced. The results are not satisfactory, as there are very few seedlings on the ground.

*Compartment 14 (2).—*Rosewood and vengai are said to be coming up very well.

*Pollachi range.—*All debris and brushwood accumulated during felling of fuel coupes were heaped up and burnt and the space dibbled with teak seeds. A good number of teak seedlings died for want of rain. The area was kept clear of weeds. The total cost of the operation was Rs. 670. The operation was discontinued as the result was not encouraging.

*Udamalpet range.—*Seeds of important fuel species have been collected for dibbling in degraded portions of fuel coupes. Arrangements are said to have been made for restocking the blanks in Amaravathi Coupe XI during 1931-32.

*Tinnevely.—*Twenty-five measures of rosewood seeds and an equal quantity of teak were sown in six felled coupes of Nanguneri range in September and October 1930. There was no germination of rosewood. Teak germinated but the seedlings after attaining a height of about six inches died due to insect attack and drought.

(c) Afforestation.

34. *South Coimbatore.—*During the year 58 rosewood trees were root-wounded in Regeneration area, 1930, 65 in Regeneration area, 1931, 60 in Compartment 7, 35 in Compartment 8, and 38 in Compartment 9 of the Punachi Timber Working Circle. Of the above, 46 in Regeneration area, 1930 and 50 in Compartment 7 have sent forth root-suckers. The root-wounding in other areas was done in March 1931 and the results are watched.

*Tinnevely.—*Sowings of the following species were undertaken in the Kudiraimoliteri reserve. Palmyra nuts were dibbled, 12 feet by 12 feet in Teri Series V, over an area of 1,100 acres, in six compartments at a cost of Rs. 2,571-4-0. Similarly palmyra nuts were dibbled by seven palmyra lessees over an area of 120 acres in accordance with the terms of the lease. The results have so far been satisfactory. Germination is still in progress but the

year was abnormally bad as regards rain, the Teri forest receiving only 21 inches of rainfall during the north-east monsoon against 58 inches recorded in the previous year for the same period.

*Madura.—*All heaped up refuse in some of the worked fuel coupes of all the ranges except Palni was burnt, the resulting ash was raked up with the soil and seeds of *Albizzia amara*, *Acacia planifrons*, *Cassia auriculata*, *Chloroxylon Swietenia*, *Wrightia tinctoria* and *Albizzia Lebbek* were sown in the south-west and north-east monsoons. The germination in the former monsoon was poor but in the latter was good. Seedlings looked healthy till the middle of January, but, later for want of rain several withered away and died. *Acacia planifrons* and *Wrightia tinctoria* seemed to thrive better than the other species. It remains to be seen how many would survive the hot weather and how many that died back will re-establish themselves at the break of the monsoon.

(iii) Plantations and other forms of regeneration not under working plans or schemes.

35. *South Coimbatore.—*A 5-acre plot was selected in Compartment 2, Punachi Working Circle, and dibbled with sandal seeds. There are very few seedlings now and the operation is reported to be unsuccessful. Another 5-acre plot was selected in Compartment 5, and dibbled with sandal seeds in May 1931. The result is being watched.

*North Coimbatore.—*Sandal seeds were, as usual, dibbled in small plots, 10 feet by 10 feet to serve as propagation centres. Seventy seedlings were found surviving in Satyamangalam range. In Talamalai range, plots of one square chain were selected in each of the ten beats and the area cleared. Mounds 6 feet by 3 feet were raised and sandal seeds sown. Four thousand eight hundred and thirty-nine seedlings were found surviving. Brushwood in two worked fuel coupes of Bhavani range were collected and heaped 5 feet by 5 feet by 1½ feet. Two hundred heaps were so made and burnt. Seeds of *Albizzia Lebbek*, *Albizzia amara* and *Acacia* were sown. Seeds germinated fairly well and there were many seedlings in most patches. But at the end of the hot weather, only 25 seedlings of *Acacia* survived.

Sandal seeds were dibbled in all the beats of Mettupalaiyam range. Germination was good but the patches were washed away by the heavy rains.

*Madura.—*Attempts were made to introduce sandal, where it could be propagated with advantage, in small areas of one acre. Enumeration in January showed fair results, but several died.

during the hot months. An enumeration of the previous years' sowings since 1921-22 showed that 166 seedlings are surviving with heights varying from $1\frac{1}{2}$ to 30 feet, some of the 1921-22 plants being 20 feet to 30 feet high.

Tinnevelly.—Sandal seeds were dibbled in Valliyur reserve forest in places where dead casuarina stood. *Erythrina* cuttings were planted free of cost by subordinates to serve as hosts to the sandal seedlings. At the close of the year 147 seedlings of 1929-30 sowings, and 35 of 1930-31 were found to survive. The results of the sowing are reported to have been satisfactory.

(iv) *Tending*.

36. *Kollegal*.—Tending of sandal consisting of creeper cutting was done over 22,030 acres at a cost of Rs. 329.

North Coimbatore.—Creeper-cutting on sandal was done over 1,813 acres at a cost of Rs. 635. The results are reported to be satisfactory.

South Coimbatore.—The prescribed weedings in Regeneration areas, 1919, 1921-28 of Tunacadavu range and tendings in Regeneration area, 1926-30 and in Compartments 14-a, b, c, d, and Compartment 2 of Punachi Timber Working Circle were carried out as usual. Weedings round coppice shoots in the felled fuel coupes of Pollachi and Udamalpet ranges were also carried out.

Madura.—Tending of sandal trees in all ranges except Ayyalur was done at a cost of Rs. 171. Rupees 17 was spent towards tending two and fifteen acres of *Albizia Lebbek* plots in Vanna-thiparai.

Tinnevelly.—Weeding was done in Mundanthorai teak plantation of 1928 and in Padarmalai Coupe XXVIII free of cost by subordinates. Replacing of casualties was done in the Padarmalai teak plantation, 1928 at a cost of Rs. 10. Rupees 30 was spent in tending the sandalwood area in Kuttalam.

(v) *General*.

37. *Kollegal*.—To improve the stocking of degraded fuel coupes, *Acacia cyanophylla*, *Prosopis juliflora* and *Cassia siamea* seeds were sown as an experiment. The results proved most disappointing.

Madura.—Creeper-cutting in regeneration areas is reported to have been done by subordinates free of cost.

Tinnevelly.—Climbers on important species are reported to have been cut by subordinates during their patrol duty free of cost. Creeper-cutting in three fuel coupes over an area of 229 acres was, however, carried out at a cost of Rs. 86.

CHAPTER IV.—EXPLOITATION.

(a) SYSTEM OF MANAGEMENT.

(i) *Major forest produce*.

38. The silvicultural systems in force were—

(i) Clear-felling with natural regeneration.

(ii) Simple coppice.

(iii) Coppice with standards.

(iv) Selection fellings.

(v) Unworked or other fellings.

(i) *Clear-felling with natural regeneration*.—This was confined to an area of 103 acres in *South Coimbatore*.

(ii) *Simple coppice*.—In fuel coupes, an area of 384 acres in *Kollegal*, 1,224 acres in *North Coimbatore*, 383 acres in *South Coimbatore*, 3,792 acres in *Madura*, and 485 acres in *Tinnevelly* were exploited during the year.

(iii) *Coppice with standards*.—The areas dealt with under this method were 142 acres in *Madura* and 1,193 acres in *Tinnevelly*.

(iv) *Selection fellings*.—In *Kollegal*, small timber for agricultural purposes was extracted over an area of 7,057 acres. In *South Coimbatore*, 290 acres were exploited for big timber for sale at Pollachi; and 155 acres for supply of sleepers to the railway. In *Tinnevelly*, an extent of 30 acres of the evergreen forests was gone over for the extraction of *Mesua* for supply of sleepers to the railway and other timber for local consumption. Besides the above, dead sandalwood trees were extracted over an extent of 48,200 acres in *Kollegal*, 2,400 acres in *Tinnevelly* and 38,518 acres in *North Coimbatore*. Green sandal trees in patta lands were extracted in about 100 acres in *Kollegal*. The aggregate yield from all these sources was 378 tons of sandalwood. The total output of timber was 332,000 cubic feet and of fuel 2,647,000 cubic feet from both the working plan and non-working plan areas of reserves in the Circle.

(ii) *Minor forest produce*.

39. Bamboo coupes were, as usual, worked on a 3-year rotation in all the ranges except in *Kollegal* where, on account of the gregarious flowering of *Bambusa arundinacea* and also of the sporadic flowering of *D. strictus* on more than usual scale, the entire felling series had to be leased. Bamboos required for departmental works were collected departmentally. In *Kollegal*, coupes which

could not be leased, were worked under the controlled permit system. Removal of dead bamboos was permitted in *Kollegal* and *North Coimbatore* to minimize the risk of fire.

40. *Grazing*.—This was, as usual, controlled by permits, a single permit being valid for a whole range.

As regards *minor forest produce*, the system of management was to lease the right of collection of the different items of produce annually in accordance with the provisions of the current working plans or schemes, over well-defined units of reserved forests, the range being the unit of sale. Where no contractor could be found the collection was to be departmental. The important items of minor forest produce were: ivory, gallnuts, cardamoms, sambhur and deer horns, tamarind, avaram bark, vembadam bark, konnai and somai bark and others. Ivory in *South Coimbatore*, gallnuts and sambhur and deer horns in *North Coimbatore* were collected departmentally. Konnai bark was, as usual, leased out on a 5-year rotation in *North Coimbatore* and *Madura*. It was not collected in *South Coimbatore* and *Tinnevely* and the sale in *Kollegal* was postponed to 1931-32. In *South Coimbatore*, the right of collection of cardamoms on the Anamalais was leased out to the Planters' Association to prevent illicit removal of the planters' crop in the estates under cover of Government leases. Removal of stones, thorns and earth was permitted on permits to a limited extent in *Madura*.

Grass.—Free removal of fodder grass was not permitted. It was removed on permits in *Kollegal* and leased out in other divisions except *South Coimbatore* where there was no demand. Removal of manure leaf was permitted in two ranges of *Tinnevely* on permits.

(b) AGENCY OF EXPLOITATION.

(i) By departmental agency.

41. *Major produce*.—Timber and sandalwood continued to be extracted departmentally. In *South Coimbatore* timber from the forests of Mount Stuart and Punachi Working Circles was extracted departmentally and carted to Pollachi depot for sale. Top ends of trees were converted into spokes and felloes and sold either at the forest depots or carted to Pollachi for sale. Logs that were not likely to pay after carting were sold at the forest depots. Brake poles were, as usual, cut and supplied to cartmen both on the Anamalai ghaut road and Satyamangalam-Chamrajnagar ghaut road. *Mesua* trees were extracted departmentally from the Kal-ar valley for sleepers and transported to Pollachi for supply to the railway.

so thousand one hundred and eighty-four cubic feet of red cedar antlings were converted and sold to Messrs. Spencer & Co., indigul.

In *Tinnevely*, 29 trees of seven shola species felled from an experimental plot were converted into saleable units to meet the local demand. Total quantity so obtained including unsold stock at the depot during the year was 8,694 cubic feet of which 5,833 cubic feet were sold for Rs. 6,643. In addition three *Mesua* trees were felled and converted into 44 B.G. and 17 M.G. sleepers for supply to the railway.

42. *Minor produce*.—Gallnuts, sambhur and deer horns in *North Coimbatore*, and ivory in *South Coimbatore* were collected departmentally and sold in auction.

(ii) By purchasers.

43. Fifty-five cubic feet of Poon (*Calophyllum tomentosum*) timber were sold from shola forests at five annas per cubic foot. Fuel coupes were leased as usual to contractors except in *Kollegal* and *North Coimbatore* where coupes that could not be sold, were worked under the regulated permit system.

44. *Minor forest produce*.—Bamboos and minor produce were leased out to contractors. Two coupes in *Kollegal* that could not be sold and a small area in the Mettupalaiyam range in *North Coimbatore* were worked under the regulated permit system.

45. *By right and privilege holders*.—The quantity and estimated value of the different kinds of produce removed is shown in the following statement:—

	Timber in thou- sands of cubic feet.	Value.	Fuel in thou- sands of cubic feet.	Value.	Bamboos in value.	Grazing value.	Other minor produce in value.	Total.
		RS.			RS.	RS.	RS.	RS.
Right and privilege holders.	..	..	..	..	..	1,416	611	2,027
Free grantees	24	5,041	..	..	376	15	22	413

Cattle up to 30 in number belonging to a temple in grazing block of Udamalpet range in *South Coimbatore* were allowed to graze free in the reserve. The Pulayars of Thalini were allowed to cultivate 33 acres in accordance with the right admitted at settlement. The right to free grazing in the Amphill down reserve in *Madura* was continued and the number of cattle admitted was 5,087 against 6,213 in the previous year.

46. *By free grantees.*—The free grants were chiefly for the re-building of houses destroyed by fire and heavy floods in *North Coimbatore*. Except timber, all the other grants were from reserves.

47. *Outturn and sources of forest produce.*—The attached statement shows the total outturn of major and minor produce from all classes of forests by all agencies during the year as compared with that of the previous year:—

Agency of exploitation.	Timber and sandalwood in thousands of cubic feet.		Fuel in thousands of cubic feet.		Bamboos in value.		Minor produce including grazing.	
	1930-31.	1929-30.	1930-31.	1929-30.	1930-31.	1929-30.	1930-31.	1929-30.
RESERVES.					RS.	RS.	RS.	RS.
By Government Agency.	230	207	96	97	5	9	4,442	1,272
By purchasers ..	102	99	2,551	2,992	38,158	36,215	1,80,545	1,96,222
By right and privilege holders.	..	..	..	..	..	..	2,027	2,301
By free grantees ..	..	..	..	..	376	..	37	..
Total ..	332	306	2,647	3,089	38,539	36,224	1,87,051	1,99,795
UNRESERVES.								
By Government agency.	..	..	..	..	..	..	..	..
By purchasers ..	210	226	314	326	3	2	36,183	46,095
By right and privilege holders.	..	..	..	..	..	..	..	..
By free grantees ..	24	28	..	..	..	14	..	97
Total ..	234	254	314	326	3	16	36,183	46,192
Grand total ..	566	560	2,961	3,415	38,542	36,240	2,23,234	2,45,987

48. *Reserves—By Government agency—Timber.*—The increase in 1930-31 was chiefly in *Kollegal* due to a larger quantity of sandalwood extracted and in *South Coimbatore* to increased outturn of timber from *Punachi Timber Working Circle*.

Fuel.—The increase in 1929-30 was due to sale of fuel from *Valliyur* reserve in *Tinnevely*.

Minor produce.—The increase in 1930-31 was due to departmental collection of gallnuts, sambhur and deer horns in *North Coimbatore*.

49. *By purchasers—Timber.*—The increase was chiefly in *Tinnevely* due to a larger quantity of small timber obtained from fuel coupes sold standing, than was the case in 1929-30.

Fuel.—The decrease was in *Kollegal* and *North Coimbatore* due to a smaller quantity of fuel removed from coupes on account of heavy floods and damage to tree growth. The fall in the selling rate of fuel has also contributed to the decrease.

Bamboos.—The increase was due to better prices realized in *South Coimbatore* and to sale of dead bamboos in *Tinnevely*.

Grazing and minor produce.—The decrease was due to cattle mortality and poor prices realized for gallnuts and avaram bark in *Kollegal* and *Madura* and partly to the departmental collection of gallnuts, sambhur and deer horns in *North Coimbatore*.

50. *Free grants.*—The free grants were chiefly for re-building houses destroyed by fire and floods.

The following statement gives the total quantity of sandalwood sold from each division and the revenue realized in 1930-31.

Division.	Quantity.	Revenue realized.
	QRS.	RS.
Kollegal ..	14,820 (185.2 tons).	1,40,175
Coimbatore, North ..	9,519 (119.4 tons).	98,791
Tinnevely ..	159 (2 tons).	1,763

CHAPTER V.—FINANCIAL RESULTS.

51. The statement below shows the financial position of the year under report compared with that of the previous year for the Circle as a whole:—

NON-COMMERCIAL.

Receipts.

	1930-31.	1929-30.
	RS.	RS.
Details.		
Revenue including Valparai sleeper project ...	* 10,81,829	12,41,841
Deduct—Refunds ...	5,187	4,457
Net Total ...	10,76,642	12,37,384

* Excludes Rs. 2,504 relating to the Nilgiris and Madras Forest College and includes Rs. 1,763 realized in the IV Circle.

Expenditure.

Details.	1930-31. RS.	1929-30. RS.
8.b. Conservancy, maintenance and regeneration	2,70,827	2,34,773
52-A. Capital Outlay	18,423	31,627
Total ...	2,89,250	2,66,400
Deduct—Receipts and recoveries on capital accounts on account of Mount Stuart Forests	17,580	24,661
	2,71,670	2,41,739
8.c.i. District Establishments ...	4,05,234	3,84,629
8.c.iii. Exploitation — Establishments	449	...
52-A. Forest—Establishments ...	6,362	...
Total expenditure ...	6,83,715	6,26,368
Surplus ... +	3,92,927	+ 6,11,016

COMMERCIAL.

Revenue *	1,60,482	+ 2,02,936
Expenditure on works	1,15,601	1,18,384
Establishment	37,875	40,339
Interest and saw mill working expenses	22,778	49,993
	1,76,254	2,08,716

* Includes Rs. 11,263 being valuation of stock of timber.

† Rs. 4,313, being difference in the opening and closing stocks of timber, has been deducted.

During the year, under non-commercial areas, the gross revenue fell short by Rs. 1,60,012, while the total expenditure was increased by Rs. 57,347 when compared with the actuals of the previous year. The net surplus for the year under report is Rs. 3,92,927 against Rs. 6,11,016 for the previous year.

Under the commercial concern, the gross revenue and the total expenditure were reduced by Rs. 42,454 and Rs. 32,462 respectively.

52. The percentage of the several items of revenue and expenditure under non-commercial areas is noted below in a comparative manner:—

Receipts.

Items.	1930-31. PER CENT.	1929-30. PER CENT.
Major produce—Forest Department	60.3	62.6
Major produce—Revenue Department	4.8	4.5
Bamboos—Forest Department	3.4	2.8
Grass and grazing—Forest Department	11.2	10.0
Minor produce—Forest Department	6.0	6.1
Minor produce—Revenue Department	3.6	4.0
Other items—Forest Department	10.7	10.0

Expenditure.

8. b. Conservancy, Regeneration and Maintenance and 52-A Capital outlay—

Exploitation of forests	23	32
Upkeep and improvement of forests	27	16
Miscellaneous	50	52

The important variations under 'Receipts' and 'Expenditure' are explained below:—

Major produce—Forest Department.—The decrease was chiefly under sandalwood by Government agency and timber and fuel by purchasers:—

	RS.	
Sandalwood	1,41,868	Due to sale of a smaller quantity for a lower rate than in the previous year.
Timber	3,948	Due to there being no demand for timber felled from the Experimental plot at Kannikatty.
Fuel	21,352	Due chiefly in Madura to poor prices obtained for fuel coupes on account of trade depression.

Major produce—Revenue Department.—The decrease of Rs. 4,448 was chiefly under fuel in Madura and Tinnevely.

*Bamboos—Forest Department—Increase (+Rs. 1,742).—*Although there was a decrease in *Kollegal* and *North Coimbatore* due to non-sale of two coupes in the former district and to the flowering of bamboos and non-sale of coupes in the *Palamalais* of *Bhavani* range in the latter district, it was compensated by an increase in *South Coimbatore*, *Madura* and *Tinnevely* under 'purchasers', due to better prices obtained during the year and to collection in *South Coimbatore* in 1930-31 of one-fourth of the revenue relating to 1931-32.

*Grass and grazing—Forest Department—Decrease (—Rupees 3,638).—*The decrease was in *Kollegal* and *Madura* due to cattle mortality.

*Minor produce—Forest Department.—*The increase was only Rs. 354 which calls for no remarks.

*Minor produce—Revenue Department (—Rs. 9,900).—*The decrease was chiefly in *Madura* and *Tinnevely* due to fall in prices on account of general trade depression.

*Other items (—Rs. 7,976).—*The fall is chiefly in *Kollegal*, *Madura* and *South Coimbatore*, due partly in *Kollegal* to the contribution due from the District Board, on account of the maintenance of roads, not being realized in 1930-31; in *Madura*, to a smaller amount of compounding fees realized and in *South Coimbatore*, to rents on buildings in charge of the regeneration-unit of the Mount Stuart commercial concern not being adjusted.

*Expenditure—S. b. Conservancy, maintenance and regeneration.—*The increase was chiefly in *Kollegal*, *South Coimbatore* and *Tinnevely*.

*Kollegal—Sandalwood.—*Due to a greater quantity of sandalwood extracted than was anticipated, and to extensive repairs to the ghaut roads to make them fit for heavy traffic.

*South Coimbatore.—*Due chiefly to adjustments of expenditure incurred in 1929-30, in 1930-31 accounts and partly to increase in expenditure under roads, buildings and sowing and planting.

*Tinnevely.—*Due to a larger quantity of timber extracted during the year than anticipated.

*52-A. Capital outlay on forests.—*There had been an increase under buildings in *Kollegal*, due to construction of four subordinates' quarters and a godown for storing sandalwood; in *North Coimbatore*, to construction of a sandalwood godown; and in *Tinnevely*, to purchase of two boats. The excess has been counterbalanced by a decrease in expenditure in *South Coimbatore* due to the withdrawal of Rs. 46,034 being the capital invested.

*8. c.i. District Establishments.—*The increase has been under 'Direction' and also in the two Coimbatores. Under 'Direction' it was due to the posting of an Extra Assistant Conservator on lac work and to the grant of passage money to one Conservator. In *North Coimbatore*, it was due to the posting of an Extra Assistant Conservator as Double Lock Officer, while in *South Coimbatore* it was due partly to the posting of a Provincial Officer for stock-taking of timber; and partly to the grant of increments to clerical staff and leave salary and promotion to foresters.

*52-A. Capital Establishment.—*A sum of Rs. 6,362 relating to establishment charges of the Mount Stuart commercial concern incurred in 1929-30 was adjusted in the accounts of 1930-31.

53. The revenue outstanding at the end of the year was Rs. 2,23,876-6-0 of which Rs. 16,943-8-8 fell due within the year. Of this, Rs. 5,511-11-9 have been realized since and only a sum of Rs. 11,431-12-11 remains to be collected. This includes the sum of Rs. 10,044-10-9, due from contractor A. Subba Pillai and its collection is pending disposal of the Letter Patent Appeal pending in the High Court.

The estimated value of timber and other produce at sale depots at the end of the year was Rs. 1,23,855 against Rs. 98,814 at its commencement.

*54. Financial results.—*The financial results of each district are dealt with below, after apportioning the 'Direction' charges to the divisions:—

KOLLEGAL.

	1930-31.	1929-30.
	RS.	RS.
Receipts	2,14,544	2,38,653
Charges	1,18,313	1,08,223
Surplus	96,231	1,30,430

*Receipts.—*The decrease was mainly under sandalwood due to a smaller quantity of, and lower rates obtained for, sandalwood sold and to non-realization of the amount of contribution due from the District Board for the maintenance of roads. The fall was also noticeable under bamboos, grazing and minor produce. Due to lack of demand, bamboo coupes could not be sold and mortality among cattle accounted for the fall under grazing.

*Charges.—*The increase was due to: (i) a larger quantity of sandalwood extracted than anticipated; (ii) extensive repairs to the forest ghaut roads to make them fit for heavy traffic, and (iii) construction of a bridge, four subordinates' lines and a sandalwood godown. Under Establishment there was an appreciable fall due to

the holding of a Vernacular Training School in the previous year and transfer of two special duty rangers and a fifth-grade ranger from the district.

NORTH COIMBATORE.

	1930-31.	1929-30.
	RS.	RS.
Receipts	2,10,869	3,37,889
Charges	1,31,934	1,18,399
Surplus	78,935	2,19,490

The decrease in receipts was mainly under sandalwood (Rs. 1,25,194) due to smaller quantity of sandalwood sold and low prices fetched at the auction. This was partly compensated by an increase under fuel due to better prices realized for it, and under 'Miscellaneous,' to an increase in the collection of compounding fees and contribution received from District Board. Under "Other minor produce by purchasers," there was a drop due to collection of gallnuts having been undertaken departmentally.

Charges.—There was an increase of Rs. 2,200 under minor produce by Government agency due to the departmental collection of gallnuts, and an increase under forest produce removed by private agency, due to (i) the entertainment of seven tannadars, (ii) the refund of grazing fees to panchayats, (iii) the construction of a clean-chipping shed, and (iv) the demarcation of the Barabetta reserve. This was partly counterbalanced by a fall of Rs. 4,954 under sandalwood due to extraction of a smaller quantity of sandalwood and payment of a less amount of compensation for sandalwood extracted from patta lands. Under Establishment and Travelling Allowance, there was an increase due to (i) the posting of an Extra Assistant Conservator as Double Lock Officer since August 1930, (ii) to an increase in the number of foresters and supernumerary rangers, and (iii) payment of an increased rent for the District Forest office and of arrear rent on residential buildings to the Public Works Department.

SOUTH COIMBATORE.

	1930-31.	1929-30.
	RS.	RS.
<i>Non-commercial —</i>		
Receipts	2,60,971	2,20,993
Charges	2,02,493	1,95,953
Surplus	58,478	25,040
<i>Commercial —</i>		
Receipts	1,60,482	2,02,936
Charges	1,76,254	2,08,716
Loss	15,772	5,780

Non-commercial—Receipts.—The increase was mainly due to the adjustment in 1930-31 of Rs. 38,464 being the profits from the Mount Stuart commercial concern for the year 1929-30.

Charges.—The increase was mainly due to (i) to felling a portion of Compartment 7 of Punachi Working Circle, in advance, (ii) to carting a larger quantity of timber to Pollachi for sale than originally anticipated; (iii) to the adjustment in the accounts of 1930-31 of the expenditure incurred in 1929-30; and (iv) to the increased number of gazetted assistants attached to the division during the year.

Commercial—Receipts.—The decrease of about Rs. 42,000 was chiefly due to want of demand for timber and consequent poor sales at low rates.

Charges.—The decrease of about Rs. 32,000 was due to less quantity of timber extracted during the year than in 1929-30, and to savings in the saw mill expenses, interest and overheads on account of the closure of the saw mill.

The loss during the year was Rs. 15,772 out of which a sum of Rs. 12,068 was adjusted being depreciation reserve on permanent roads transferred to profit and loss account. On account of this adjustment, the net loss was only Rs. 3,704.

A statement showing the production of cost of timber per cubic foot at Topslip and at Pollachi, the quantity extracted and transported and the quantity sold at Topslip and at Pollachi and other miscellaneous sales is appended:—

MOUNT STUART WORKING CIRCLE.

	Quantity.	Rate.	Amount.
<i>Cost of production to Top Slip.—</i>			
Felling charges	C. Ft. 115,617	RS. A. P. 0 0 7-12	RS. A. P. 4,287 2 10
Dragging charges	114,763	0 1 2-15	8,459 15 8
Share of district overheads	115,617	0 7 11-42	57,536 12 3
		0 9 8-69	70,283 14 9
<i>Cost of production at Pollachi.—</i>			
Felling	115,617	0 0 7-12	4,287 2 10
Dragging	114,763	0 1 2-15	8,459 15 8
Sawing and squaring	101,444	0 0 1-78	938 4 0
Share of upkeep charges for elephants for loading work in the forests	101,444	0 0 9-40	4,971 11 5
Carting to Pollachi	101,444	0 6 8-00	42,257 14 0
Share of district overheads	115,617	0 7 11-42	57,536 12 3
		1 1 3-87	1,18,451 12 2
<i>Cost of production of Scantlings.—</i>			
No scantlings were converted since the mill was closed.			

Cost of Production of Spokes and Felloes at Pollachi—

	No. of sets.	Rate.			Amount.		
		RS.	A.	P.	RS.	A.	P.
Conversion charges ...	317½	6	0	0	1,905	0	0
Carting charges to Pollachi. 312½		4	0	0	1,250	0	0
District overheads ... 317½		5	7	6	1,735	9	0
		15	7	6	4,890	9	0

Sales at Pollachi.—91,034 cubic feet were sold for Rs. 1,33, 925-5-0 and the average rate works out to Rs. 1-7-6 per cubic foot.

Sales at Topslip.—10,860 cubic feet were sold for Rs. 3,845-1-6 and the average rate works out to Re. 0-5-8 per cubic foot.

Sale of sawn timber.—5,707 cubic feet was sold for Rs. 11,009-6-0½. The average rate works out to Rs. 1-14-10.

Sales at Madura.—1,865 cubic feet were sold for Rs. 3,883-12-3 and an average rate of Rs. 2-1-4 per cubic foot was obtained.

Sale of spokes and felloes (old stock).—562 sets were sold for Rs. 6,371-10-0. Average rate works out to Rs. 11-5-5 per set.

Overseas sales.—Messrs. Pierce, Leslie & Co., sold 115 cubic feet of Haldu logs for Rs. 182-10-1 at an average rate of Rs. 1-9-5 per cubic foot.

MADURA.

	1930-31.		1929-30.	
	RS.		RS.	
Receipts	2,08,891		2,50,815	
Charges	1,34,844		1,35,615	
Surplus	74,047		1,15,200	

The decrease in receipts was mainly under firewood and charcoal by purchasers (—Rs. 22,528), due to poor prices realized for fuel coupes sold; under grazing (2,486), to cattle mortality; and under minor produce both in reserves and unreserves, on account of general trade depression.

TINNEVELLY.

	1930-31.		1929-30.	
	RS.		RS.	
Receipts	1,64,278		1,72,194	
Charges	94,029		92,368	
Surplus	70,249		79,829	

The fall under revenue was due to low rates obtained for sandalwood from reserves, and minor produce from unreserves.

Charges.—The increase was partly due to the extraction of greater quantity of timber from the experimental coupe at Kannikatti and partly to the metalling of roads and to the purchase of two boats.

TANJORE.

	1930-31.		1929-30.	
	RS.		RS.	
Receipts	17,089		19,967	
Charges	2,102		2,917	
Surplus	14,987		17,050	

Receipts.—The decrease is partly under 'firewood and charcoal' due to the poor prices realized for fuel coupes sold and partly under 'Miscellaneous—Other sources' which fluctuate.

Charges.—The increase in 1929-30 is due to an erroneous debit of Rs. 1,200 under 'Pay of officers—Voted.'

CHAPTER VI.—RESEARCH AND EXPERIMENTS.

55. Experimental plots, opened in Kollegal and North Coimbatore last year to observe the incidence of 'spike', etc., were continued to be maintained. Observations made from time to time show that the highest incidence of 'spike' occurred in July and that 'spike' had not yet spread to the reserves in Meftupalaiyam range from the primary source of attacks in the patta land adjoining the Kallar reserve. Another area was opened in the Talamalai range (North Coimbatore) to observe the conditions under which the spread of 'spike' could be arrested, but the result so far has been inconclusive, but the experiment will be continued. Experiments to introduce lac in North Coimbatore showed that it could perhaps be successfully grown on *Shorea talura* and *Zizyphus jujuba* in the hill forests of Satyamangalam and Talamalai, but it is too early to say whether the work could be taken up on a large scale. In Kollegal, the establishment, as an experimental measure, of *Acacia dealbata* and *decurrens*, as an evergreen belt for the protection of the sholas against forest fire at Bellaji has proved successful and the plants referred to in the last annual report are doing well. In consultation with the Forest Research Officer, an experiment to improve the stock in degraded fuel forests was made and seeds of *Acacia cyanophylla*, *Cassia siamea*, and *Prosopis juliflora* were sown in mounds and pits in a plot of one acre near

Lingamankera on 16th August 1930. *Acacia cyanophylla* did not come up well, but the others had a very good start both in mounds and patches. Enumeration in February 1931, however, showed that *Prosopis juliflora* seedlings had begun to die and *Cassia siamea* continued to do well. But during April 1931 *Cassia siamea* also began to die. Only eight seedlings of *Cassia siamea* and two of *Prosopis juliflora* were found surviving in May 1931.

An experiment to introduce sandal in conjunction with cereal crops and *Acacia cyanophylla*, *Cassia siamea* and *Acacia farneseana* (the latter three species to serve as hosts for sandal) was started in a 4-acre plot. The plot was subdivided into four plots of an acre each, where sandal and dhal were sown along with the three species named above on worked up soil. Enumeration made in May 1931 gave the following result:—

						Seedlings.
Plot I	Sandal	...	...	...	...	533
	Erythrina	...	...	...	...	...
Plot II	Sandal	...	...	...	...	256
	Cassia Siamea	...	...	...	...	81
Plot III	Sandal	...	...	...	...	221
	Acacia farneseana	...	...	...	...	56
Plot IV	Sandal	...	...	...	...	72
	Acacia Cyanophylla	...	...	...	...	0

In another plot sandal was raised with cereal crop but the result proved ultimately disappointing. The total cost of experiments amounted to Rs. 232.

North Coimbatore.—Experiments were conducted to introduce sandal in pits and also in conjunction with dhal, under forest conditions. The experiment so far as it related to the raising of the species in pits in the forest proved naturally a failure, but that of growing it in conjunction with dhal has given encouraging results. The cost of the operation amounted to Rs. 150.

South Coimbatore—Panachi range—Vengai sample plot—1 acre.—This plot was accidentally burnt in April 1930. The measurements recorded in August 1930 showed that they were appreciably below those recorded in previous years, presumably due to fire. The eight sholas on the grass hills continued to be fire-protected to ascertain its effect on the extension of the shola forests. The experimental burning of lantana in Periodic Block I was carried out, but, as the results obtained so far were not satisfactory, the operation was discontinued. The experimental sandal plot of five acres was a failure. Another plot of five acres has been selected and the result remains to be seen.

Madura.—The result so far achieved in the regeneration operations prescribed in the Vannathiparai scheme is detailed below:—

Plot I (1.90 acres), was a good mixture of valuable species. It contains 1,770 established seedlings over two feet in height and 827 under two feet. Further stocking is not necessary.

Plot II (0.73 acres).—Same as Plot I. It contains 543 seedlings over two feet and 344 below two feet.

Plot III (1.05 acres).—The stocking of natural seedlings is quite satisfactory, but teak is absent. It contains 718 seedlings over two feet and 405 below two feet. Rosewood is predominating.

Plot IV (0.20 acre).—It contains 319 seedlings of valuable species over two feet and 84 below two feet. Teak is absent and rosewood is predominating.

Plot V (1.50 acres).—This plot is noted for its *Stephegyne parviflora* and *Stereospermum* which form about 45 per cent of the total stock. It contains 1,431 seedlings of valuable species over two feet and 46 below two feet.

Plot VI (2.52 acres).—The stock in the plot except for the 374 *Stereospermum* seedlings is very poor. Though there are good *Adina* seed-bearing trees in the plot, there are only 23 *Adina* seedlings in it, a circumstance due largely perhaps to the absence of weed-free fresh soil to serve as a good germinating bed for the tiny seeds.

Coupe I (5 acres).—Owing to the heavy damage frequently caused by wild elephants from July 1930 to February 1931, the enumeration taken in February 1931 showed nearly 50 per cent casualties on the whole. But it is interesting to note that in addition to the artificially grown 3,181 seedlings, there were counted 1,765 naturally grown seedlings of valuable indigenous species.

Coupe II (5 acres).—Same as coupe I, but this has a good stock of teak, but there will probably never be more than a year old shoots, as this is subject to damage by wild elephants which visit the locality every year.

Coupe III (5 acres).—Owing to the utter failure of the south-west monsoon in 1930, and due to wild elephants which frequented the coupe, the percentage of casualties was as heavy as 59 per cent. But in spite of this there is a good stock of natural regeneration of rosewood and vagai (*Acacia lebbek*), both by seed and root suckers.

In this valley the soil is very rich and favourable to the growth of rosewood and 'vagai', which regenerate very freely both by seed and root suckers wherever and whenever a gap is found.

Kusum (Pulich) *Schleichera trijuga* is another species that competes with rosewood and 'vagai'. Among soft wood species

Melia dubia is one which draws one's attention. This being a fast growing species, and one which has a tendency to grow gregariously, will eventually outbeat all other valuable slow growing species, and already in all clear-felled area this species is becoming very conspicuous and predominating.

Satinwood plot.—There are 99 seedlings with an average height of 9 inches. All these seedlings look healthy and well established, but the height growth for their age is rather poor.

'*Vagai*' plot (2 acres).—There are 742 seedlings including the 1,930 seedlings. As the overhead canopy is high these seedlings are subject to heavy shade and drip.

Though the operation was started in June 1927, there are only 41 seedlings which are over two feet in height, casualties being more in the unweeded area than in the weeded.

'*Vagai*' plot (15 acres).—There are 2,082 seedlings in the plot out of which there are 841 in the weeded area and 1,241 in the unweeded. These seedlings, though they keep on the struggle, do not easily die out under shade. But they show a great tendency to shoot up and put on height growth wherever overhead light is obtained.

Cumbumettu 'vagai' plot.—The number of seedlings year by year is decreasing as the overhead canopy grows.

Aini plot—Kumili.—The seedlings appear as if they have no future. There is hardly any improvement in height growth.

A sandalwood plot of five acres was opened in Karandamalai and sandal was sown with dhal and ragi. But owing to failure of the south-west monsoon the germination was poor. Seeds were re-sown at the break of the north-east monsoon and the germination was fair. On harvesting ragi an enumeration made in February 1931 showed that 396 seedlings were surviving. The percentage of success was 22.

Tinnevely.—The following seeds were sown in Kudiraimoliteri reserve :—

Species.	Area in acres.	Cost.	Result.
<i>Dodonea viscosa</i>	Fifty acres ..	Rs. 68 A. 5	Most of the seedlings died unable to survive the hot weather.
<i>Acacia planifrons</i>	Ten acres ..	..	Germination was noticed but the seedlings did not survive the abnormally severe hot weather.
Cashew nut	Five acres ..	..	Practically a complete failure.

Experimental sowings of the following species were tried on mounds and furrows in the fuel coupes of three ranges :—

<i>Cassia Siamea</i> 6½ lb.	
<i>Prosopis Juliflora</i> 8 lb.	
<i>Acacia Cyanophylla</i> 6 oz.	
<i>Albizzia Lebbek</i> }	2 acres
<i>Melia azadirachta</i> }	

A fair number of *Cassia siamea* and *Albizzia Lebbek* seedlings have survived, but *Prosopis juliflora* did not do well. Neem seeds were attacked by rodents and destroyed.

A copy of the report on the silvicultural experimental work at Kannikatti by the Assistant Working Plans Officer for regenerating the blanks caused by felling, selected evergreen trees in Kannikatti range was sent to the Conservator of Forests, Third Circle.

CHAPTER VII.—ADMINISTRATION.

56. Mr. T. A. Whitehead held charge of the Circle till 6th February 1931 afternoon, when he was relieved by M.R.Ry. Rao Sahib K. R. Venkataramana Ayyar Avargal.

Changes in the territorial jurisdiction.—The Anamalai sleeper project was transferred from the *Engineering Branch* to the *South Coimbatore Forest division* on 1st April 1930 and the Pollachi log depot from the *Forest Utilization Officer* on 1st December 1930 to the same division.

57. *Health of the establishment*.—Continued to be generally good in *Tinnevely*, except in one range, *Kannikatti*, fair in *Madura*, and not satisfactory in the other three divisions where several subordinates had to be granted leave on grounds of ill-health for varying periods.

Casualties.—In *Kollegal*, two forest guards died of malaria and one watcher was accidentally drowned in a well. One forest guard died of snake-bite in *North Coimbatore* and one forester committed suicide in *South Coimbatore*.

One forester and one range clerk retired from service in *North Coimbatore*.

58. *Sanitation—South Coimbatore*.—A sum of Rs. 642 was spent on clearing growth and on drainage round residential quarters at *Topslip* and *Anaipadi* and undertaking other sanitary measures. Rupees 25 was spent on cutting and burning *lantana* and excavating drains in the compound of the buildings at *Waterfall*. Sanitation in many places in *Kollegal* continued to be bad.

Beyond keeping the subordinates' quarters and rest-houses cleared of vegetation, no other measures were undertaken, in the division.

59. *Tours*.—The Mount Stuart forests were visited by the Chief Conservator of Forests, the Conservator of Forests, Third and Fifth Circles and the Forest Entomologist, Dehra Dun. The Timber Advisory Officer, Railway Board, Delhi, visited Pollachi and Valparai. The Chief Conservator toured in *Kollegal*, *Madura*, and *North Coimbatore* and the Conservator of Forests, in all the divisions of the Circle, spending more than six months in camp and wrote inspection notes on the forests of the *Madura* division.

All the District Forest Officers spent more than the prescribed minimum in camp, except the District Forest Officer, *North Coimbatore*, whose touring fell short by two days which is negligible.

60. *Inspection of District Forest and Range officers*.—The Conservator of Forests inspected all the District Forest offices in the Circle and the result was on the whole satisfactory, except in *South Coimbatore*.

The District Forest Officers inspected all the *Range offices* in their divisions and the result was generally satisfactory except in *Kodaikanal*, *Kannikatti* and *Bargur* ranges.

61. *The District Forest Officers' accounts*.—*Inspection*.—The audit staff of the Accountant-General's office inspected the accounts of *Kollegal*, *Madura* and *Tinnevelly* District Forest offices during the year and the result was generally satisfactory. Accounts of *North Coimbatore* and *South Coimbatore* were inspected after the close of the year and report of result is awaited. The accounts of the Mount Stuart commercial concern were audited by the staff of the Assistant Director of Commercial Audit, for the year ending 31st March 1930, and for the half-year ending 30th September 1930.

62. *Madras Forest College*.—No one was deputed to the College during the year for the 1930-32 course. One student who was deputed for the 1928-30 course returned with a higher standard certificate.

63. *Vernacular Training School*.—One forester and nine forest guards were deputed to the Vernacular Training School session held at Palghat from 1st May 1930 to 31st October 1930 and all came out successful.

CHAPTER VIII—GENERAL.

1. FORMATION AND MANAGEMENT OF PANCHAYATS.

64. No forest areas were handed over to panchayats during the year.

2. MEASURES FOR IMPROVING LOCAL SUPPLIES AND FACILITIES.

65. Except in two ranges in *Tinnevelly*, no leaf manure was removed from the reserves. The revenue realized from this source in *Tinnevelly* was Rs. 2,445 against Rs. 3,132 in the previous year. The Agricultural Department is reported in *Tinnevelly* to be giving all facilities to the ryots for growing their requirements of green leaf manure in their patta lands. The demand from reserves appears therefore likely to show a welcome decline.

Supply of fuel and agricultural implements—Kollegal.—The fuel coupes were, as usual, worked on the controlled permit system as there was no demand for coupes put up for sale standing. Removal of dry fuel from old coupes of *Araipalaiyam* was allowed to meet the local demand. The demand for agricultural implements was, as usual, being met in *Kollegal* from annual coupes laid out for the purpose, the removal being effected on the so-called 'controlled permit system'. As it was feared that this system was open to grave abuse, steps have been taken after the close of the year to evolve a more satisfactory arrangement.

In the remaining divisions, the demand for agricultural implements and small timber is being, as usual, met from fuel coupes worked through the agency of contractors. Bamboos were similarly made available from coupes of the year worked through the agency of contractors. In addition to the above, axe-cut spokes and felloes, prepared out of the top-ends of timber trees felled departmentally, were sold to the public in *South Coimbatore*. Brake-poles were also supplied, on payment, to cartmen taking loaded carts down the *Dhimbam* (*North Coimbatore*) and the *Anamalai* (*South Coimbatore*) ghaut roads.

3. IMPROVEMENT OF WATER-SUPPLY IN GRAZING GROUND.

66. Two wells in *Kollegal* were deepened at a cost of Rs. 160. A sum of Rs. 116 was spent in *North Coimbatore* on clearing jungle infested with prickly-pear and on deepening a tank. In *Madura* a well was deepened at a cost of Rs. 54 of which Rs. 50 was contributed by the villagers of R. Kombai.

Timber Transit Rules.—The rules are reported to have worked satisfactorily. The revised rules referred to in the last report were brought into force in *North Coimbatore* during the year and seven tannadars were appointed to check timber in transit. The opening of tana stations at *Hassanur* and *Kempnaickanpalaiyam* is reported to have helped the protection of *Gutialattur* reserve, against the smuggling of timber from it.

Sandalwood Transit Rules.—The rules were revised so as to bring within their scope practically the whole of the civil district

of Coimbatore with consequent provision for additional checking stations. The revised rules received the assent of Government, during the year. Rules to regulate the transport of sandalwood in the *Tinnevelly* district, having for their object the prevention of smuggling of sandalwood by sea, are awaiting the sanction of Government.

67. *Jungle tribes*.—The jungle tribes were employed in the same way as in the previous years. In *Kollegal* attempts were made to bring in more sholagas to the abandoned podus particularly to those in the *Doddasampagai* reserve. In *North Coimbatore* six additional areas covering an aggregate extent of 100.15 acres, were leased to the sholagas during the year. Out of Rs. 500 sanctioned by Government, an amount of Rs. 493-4-0 was spent on hiring or purchasing plough-bulls for four settlements. In *Madura*, the hill tribe, known as the *Puliyans*, were utilized in connexion with the cultivation of lac. A proposal to settle them down in the *Vannathiparai* reserve is under consideration. In *Tinnevelly* arrangements have been completed to lease an extent of 40 acres to form a 'Kani' settlement in the neighbourhood of *Kannikatti*.

68. *Mining and quarrying*.—There was no alteration in the rules.

69. *Cultivation in reserved forests*.—The disreservation of the *Honnametti* estate in *Kollegal* referred to in the last year's report is still pending and the estate continues to be held on lease. In *South Coimbatore* two new leases of an extent of 11.25 acres, were granted for supply of labour and for tending sandalwood trees. The areas sanctioned by Government for grant under ryotwari tenure for the cultivation of plantation products on the *Anamalais* have not yet been disreserved pending completion of survey. In *Madura* 362 acres were leased out for cultivation of cardamoms during the year, the total area under cultivation being 4,154 acres.

70. *Livestock*—(1) *Elephants*.—*South Coimbatore*.—There were 26 elephants at the commencement of the year, 12 were captured and one born, making a total of 39. Of these, five died, thus leaving a balance of 34 at the close of the year of an estimated value of Rs. 76,850.

(2) *Other animals*.—Nil.

71. *Veterinary assistant*.—The elephants were in charge of the Assistant Veterinary Inspector and were inspected by the Inspector of Livestock at frequent intervals. The health of the elephants is reported to be not entirely satisfactory but said to be improving.

72. *Civil Suit*.—*South Coimbatore*.—The suit filed in 1927 by the department regarding the return of a security deposit, was decreed in favour of the department.

Madura.—The appeal preferred to the Full Bench of the High Court and referred to last year is yet pending.

Tinnevelly.—The compensation suit appeal in respect of a portion of the disafforested portions of the Teri reserve forest pending for the last four years ended in favour of the department.

73. *Control of unreserved land by the Forest Department*.—The department has no control over the unreserved lands in the circle, except in *Kollegal* and *North Coimbatore*, where the department exercises a certain amount of control over localities containing sandalwood trees for which they have been included in the Sandalwood Working Circle of the respective divisions. In addition, an area of 866.8 acres of bamboo-covered unreserved lands in *North Coimbatore* has been included in the *Bargur* Working Circle, for exploiting bamboos. The lease of fuel in *Andi-Goundanur* unreserve in *South Coimbatore*, granted in 1929-30 on a 3-year lease continues.

ENCLOSURE.

REPORT ON EACH FOREST DISTRICT, 1930-31.

KOLLEGAL.

Description.—Same as reported in 1929-30.

Area.—Nine hundred and forty-seven square miles, all under Class I.

How the forest district is split up into subordinate administrative charges.—The whole division is divided into three ranges consisting of 49 beats.

Names of ranges with headquarters—

	Ranges.						Headquarters.
Kollegal	...	...	...	...	...	...	Kollegal.
Ramapuram	...	...	...	...	...	...	Kowdalli.
Bargur	...	...	...	...	...	...	Thattakarai.

Cost of administration—

							RS.
<i>Pay of—</i>							
Officers	...	...	...	...	...	...	10,400
Rangers	...	...	...	...	...	...	6,485
Subordinate staff	...	...	...	...	...	...	20,428
Clerical staff	...	...	...	...	...	...	6,254
Menials	...	...	...	...	...	...	752
Temporary staff	...	...	...	...	...	...	368
Allowances	...	...	...	...	...	...	11,090
Contingencies	...	...	...	...	...	...	3,742
Total	...	...	...	...	...	...	59,519

Cost under other important heads—

8-b. Forest Conservancy, maintenance and regeneration—

	rs.
Sandalwood	14,731
Timber and other produce removed by consumers and purchasers	10,353
Renewals and replacement of stores	26
Roads and bridges	7,531
Buildings	2,286
Other works	44
Regeneration	232
Fire-protection	713
Other works	329
Miscellaneous	102
Total ...	36,347

52-A. Capital outlay—

Purchase of stores	291
Demarcation	318
Other works	160
Roads and bridges—New works	1,903
Buildings—New works	8,992
Other works—New works	15
Total ...	11,679

Income from main sources—

By Government agency—

Sandalwood	1,40,175
Timber	51

By private agency—

Timber	3,437
Firewood	3,917
Bamboos	6,146
Grazing	45,614
Minor produce	5,133
Miscellaneous (including driftwood)	6,432
Receipt from Revenue Department	3,657

Total ... 2,14,562

Deduct—

Refunds	23
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2,14,539

Surplus ... 1,06,994

Chief works done.—Introduction of sandalwood in suitable places, attraction of sandalwood and supply of fuel, bamboos and small timber. Kollegal and neighbouring villages are the main operations in the district. In order to facilitate extraction of forest produce mainly sandalwood, and inspection of forests, the maintenance of the three hant roads in the district received special attention.

The three roads are—

- (1) Ajjipuram-Girgaikandi-Tamarakarai road.
- (2) Lokkanhalli-Bailur road.
- (3) Kowdalli-Chengadi-Ponnachi road.

The following buildings were built for the housing of the subordinates:—

	rs.
Subordinates's lines at Kothanur (incomplete)	4,638
Do. do. Bandalli	1,211
Do. do. Saggiam	1,242
Do. do. Chengadi	1,205
Sandalwood godown at Tamarakarai	695
Bridle-path from Uthapium to Madeswaranmalai	747

The boundary of Hoggiam enclosure was permanently demarcated.

Other works undertaken.—Early-burning of grass between the outer edges of sandal blocks and frontier boundary, deepening the wells, and creeper-cutting in sandalwood areas.

NORTH COIMBATORE.

Description.—Same as reported in 1928-29.

Area.—The division comprises of 872 square miles of reserves, of which 40 square miles are under the management of the panchayats. All the reserves under departmental control are in Class I.

How the district is split up into subordinate administrative charges.—The division consists of four ranges with 50 beats.

Ranges.	Headquarters.
Satyamangalam	Satyamangalam.
Talamalai	Do.
Bhavani	Andiyur.
Mettupalaiyam	Mettupalaiyam.

A sandalwood sale depot is located at Satyamangalam in the Satyamangalam range with a ranger in charge of it. The sandalwood extracted in North Coimbatore and Kollegal divisions, as also a part of the wood extracted in the Nilgiris district is disposed of in auction annually here.

Cost of administration—

Pay of—	RS.
Officers	13,807
Rangers	9,689
Subordinate Staff	20,560
Clerical staff	8,235
Menials	1,058
Temporary establishment	731
Allowances	12,426
Contingencies	5,325
Total ...	<u>71,831</u>

Cost under other important heads—

By Government agency—	
Timber	146
Firewood	351
Sandalwood	16,994
Minor produce	2,285
Timber and other produce removed by consumers and purchasers	10,720
Renewal and replacement of stores	97
Roads and bridges	7,813
Buildings	2,381
Regeneration	150
Fire-protection	1,878
Other works	1,118
Miscellaneous	1,145
Total ...	<u>45,078</u>

52-A. Capital—

Purchase of stores	306
Demarcation	562
Buildings—New works	1,785
Other works—New works	437
Total ...	<u>3,090</u>
Grand Total ...	<u>48,168</u>

Income from main sources—

	RS.
By Government agency—	
Sandalwood	98,791
Timber	634
Firewood	...
Other minor produce	268
By private agency—	
Timber	1,049
Firewood	24,588
Bamboos	17,435
Grazing	37,483
Other minor produce	7,938
Revenue from unreserved lands	10,200
Miscellaneous (including driftwood)	14,951
Total ...	<u>2,13,337</u>

Deduct—

Refunds	2,118
	<u>2,11,219</u>

Surplus ... 91,220

Chief works done.—Extraction and marketing of sandalwood, supply of firewood, bamboos and agricultural implements to neighbouring towns and villages, and introduction of sandal in suitable localities are the important operations in the division. Gallnuts, sambhur and deer horns were collected departmentally during the year, as an experimental measure.

The following ghaut and hill roads were maintained by the department:—

- Bargur ghaut road (11 miles, 6 furlongs).
- Dhimbam Talamalai road (15 miles, 6 furlongs).
- Kempanaiekanpalaiyam-Gairmalam road (31 miles) .
- Hassanur-Bailur road (18 miles).
- Kadambur-Uginium road (11 miles, 4 furlongs).
- Dimbam-Hosatti road (72 miles, 6 furlongs).
- Kil-Kotagiri road (5 miles, 6 furlongs).

Fire-protection of the reserves, enumeration of sandal in the Palamalai reserve, tending, demarcation of Barabetta reserve, construction of a clean-chipping shed at Satyamangalam and construction of an open channel for supply of water to the rest-house at Geddadal are other important works undertaken during the year besides improving and repairing minor roads and buildings.

Description.—Same as reported in 1928-29.

Area.—Three hundred and ninety-one square miles of which five are ryots' forests.

How the district is split up into subordinate administrative charges.—The division is divided into four ranges. Of these Tunacadavu and Punachi ranges have no beats and the other two ranges are split into seventeen beats.

Ranges.	Headquarters.
Tunacadavu	Topslip.
Punachi	Waterfall.
Pollachi	Anamalai.
Udamalpet	Udamalpet.

Cost of administration—

Non-commercial unit including Valparai project—

	RS.
Pay of officers	25,866
Pay of establishment—	
Rangers	13,490
Subordinate staff	13,416
Clerical staff	7,680
Menials	785
Temporary	2,578
Allowances	14,766
Contingencies	5,500
	84,081

Add—

Cost of permanent establishment adjusted in March finals	2,772
	86,853

Cost under other heads—Non-commercial unit—

8 (b) Forest Conservancy, Maintenance and Regeneration—

	RS.
Timber by Government agency	85,675
Firewood by Government agency	164
Minor produce	64
Timber and other produce removed from forests by consumers and purchasers	2,929
Renewals and replacement of stores	317
Feed and upkeep of cattle	13,834
Roads and bridges	4,670
Buildings	3,166
Other works	1,453
Rates and taxes	50
Maintenance and boundaries	219
Regeneration	13,049
Fire-protection	1,549
Other works	1,782
Rent of Tekkadi leased forests	2,500
Miscellaneous	— 25
Total ...	1,31,396

Cost of sleeper operations in Pollachi depot including Forest Utilization Officer's overheads

5,921

Total ... 1,37,317

52-A. *Capital—*

Roads and bridges	9,511
Buildings	2,864
Other works	— 60
Purchase of cattle	17,452
Purchase of stores, tools and plant	82

Organization, etc.—

Sowing and planting	6,221
Protection from fire	1,609
Other works	336

Total ... 38,015

Investments in Government commercial undertakings—Mount Stuart forests

— 46,449

Grand Total ... — 8,434

Deduct—

Receipts and recoveries on capital account ... 17,580

Net Total ... — 26,014

Income from main sources—

	RS.
By Government Agency—	
Timber	1,67,721
Firewood	120
Minor produce	585
By private agency—	
Timber	724
Firewood	15,716
Bamboos	7,995
Grazing	4,634
Minor produce	6,704
Miscellaneous	6,616
Revenue from unreserved lands	7,436
Profits for 1929-30 from Government Commercial undertakings adjusted during the year.	38,464
Recoveries of investments from Government Commercial undertakings	68
Recoveries of indirect charges	6,544
	2,63,327
Deduct—Refunds	2,359
Total ...	2,60,968
Surplus from non-commercial unit	62,812

*Mount Stuart Working Circle—**Receipts for 1930-31—*

Timber	1,57,601
Bamboos	2,400
Miscellaneous	481
	1,60,482
Add—Depreciation reserve on permanent roads adjusted	12,068
Total ...	1,72,550

Expenditure—

Timber	73,734
Feed and keep of cattle	13,432
Renewals and replacement of stores	205
Roads and bridges	16,516
Buildings including temporary sheds	683
Other works	1,264
Working plans	600
Other works	389
Rent of Tekkadi leased forests	2,500
Supplies and services	6,278
Total ...	1,15,601

Establishment—

	RS.
Pay of establishment—	
Permanent	10,374
Temporary	1,303
Travelling allowance	1,993
Fixed travelling allowance	812
Other compensatory allowances	144
Rent of buildings	1,936
Miscellaneous	955
Overheads	20,358
Total ...	37,875
	RS.
Interest on capital	23,660
Less interest on depreciation reserve deposit	— 822
	22,778
	1,76,254
Net loss	3,704
Surplus for the whole division	59,108

Chief works done.—Extraction of timber from Mount Stuart and Punachi Working Circles, elephant-capturing in Tunacadavu range and regeneration of the areas exploited. Extraction of sleepers from Valparai. Formation of teak plantations.

The following are the other works undertaken:—

Carting timber for sale to Pollachi, cutting and conversion of spokes and felloes, repairs to roads, buildings and telephone line. Fire-protection of plantations, depots and buildings. Anti-malarial measures to keep forest stations free from malaria. Demarcation of a portion of the outer boundary of Punachi Working Circle and demarcation of fuel coupes and regeneration areas. Extraction of sleepers and transport to Pollachi for supply to railways. Construction of fair-weather road in Tunacadavu range for extraction of timber. Extension of telephone line from Anaipadi to Sungam. Construction of subordinates' lines at Manupatti and construction of latrines to the buildings at waterfall.

MADURA.

Description.—Same as reported in 1928-29.

Area.—Six hundred and eighty-three square miles. Of this 37 square miles are ryots' forests.

How the district is split up into subordinate and administrative charges.—

Ranges.	Headquarters.
Cumbum	Cumbum.
Palni	Palni.
Kodaikanal	Kodaikanal.
Ayalur	Ayalur.
Natham	Natham.
Sholavandan	Andipatty.

Cost of administration—

	RS.
Pay of officers	18,403
Rangers	11,605
Subordinate staff	26,158
Clerical staff	8,365
Menials	1,403
Temporary staff	1,053
Allowances	13,881
Contingencies	3,464

Total ... 84,332

Cost under other important heads—

Timber	398
Firewood	1,017
Sandal wood	93
Forest produce removed by consumers and purchasers	13,524
Renewals and replacements of stores	78
Roads and bridges	11,216
Buildings	2,514
Other works	78
Regeneration	364
Fire protection	3,556
Other works	331
Miscellaneous	393

Total ... 33,562

52A. Capital—

Purchase of stores	432
Demarcation	1,670
Other works	868
Roads—New Works	493
Do. in progress	334
Buildings—New works	1,690
Other works—New works	489

Total ... 5,976

Total ... 39,538

Grand Total ... 1,23,870

Income from main sources—

	RS.
By Government agency—	
Timber	839
Firewood	722
By private agency—	
Timber	1,214
Firewood	91,630
Bamboos	2,957
Grazing	24,478
Other minor produce	28,468
Miscellaneous	25,116
Receipts from unreserved lands	35,160
Total	2,10,584
Deduct—Refunds	1,697
Total	2,08,887
Surplus	85,017

Chief works done.—These are the supply of fuel, bamboos and timber, and the maintenance of long lines of communications belonging to district boards and the Forest Department. Sylvicultural experimental work is in progress at Vannathiparai. Experiments are being continued regarding introduction of lac in Vannathiparai reserved forests. The boundary lines of some of the enclosures and reserves and the areas granted for the cultivation of cardamoms are being demarcated. A Public Works Department building at Manapparai was purchased during the year to serve as a forester's quarters. The pine plantations and some sholas were fire-protected.

TINNEVELLY.

Description.—Same as reported in 1928-29.

Area.—Four hundred and seventeen square miles of which ten are ryots' forests.

How the district is split up into subordinate administrative charges.—The whole division is divided into six ranges with 51 beats:—

Ranges.	Headquarters.
Kodamadi	Ambasamudram.
Kannikatti	Do.
Kuttalam	Kadayanallur.
Srivilliputtur	Srivilliputtur.
Nanguneri	Sivanaperi.
Srivaikuntam	Srivaikuntam.

Cost of administration—

	RS.
Pay of—	
Officers	7,700
Rangers	11,008
Subordinate staff	15,417
Clerical staff	9,013
Menials	980
Temporary staff	629
Allowances	7,044
Contingencies	3,171
Total ...	54,962

Cost under other important heads—

8. (b) Forest Conservancy, maintenance and regeneration—By Government agency—

	RS.
Timber	5,950
Sandalwood	346
Forest produce removed by consumers and purchasers	6,890
Renewals and replacement of stores	294
Roads and bridges	4,500
Buildings	3,597
Other works	123
Maintenance of boundaries	3
Regeneration	301
Fire-protection	439
Other works	236
Miscellaneous	310
Total ...	22,989

52. A. Capital—

Purchase of stores	1,555
Sowing and planting	2,640
Roads—New works	1,627
Total ...	5,822
Grand Total ...	83,773

Income from main sources—

	RS.
By Government agency—	
Sandalwood	1,763
Timber	8,697
Firewood	4
By private agency—	
Timber	30
Firewood and charcoal	90,391
Bamboos	1,920
Grazing	8,426
Other minor produce	13,468
Miscellaneous	12,365
Total ...	1,37,064
Receipts from unreserved lands	27,300
Total ...	1,64,364
Deduct—Refunds	90
Total ...	1,64,274
Surplus	80,501

Chief works done.—Departmental extraction of timber from the evergreen forests and supply of firewood, and of sandalwood from the Alaccoil valley, on a fairly large scale, through the agency of contractors amongst the most important works. The large scale palmyra plantings in Kudiraimoliteri reserve to fix the movement of the shifting sands and to form a valuable crop for the future is another work of importance in the division. Two hundred and forty-nine broad gauge sleepers and one hundred and fifty-two metre gauge sleepers were applied to the railway during the year.

TANJORE.

Description.—Same as reported in 1929–30.

Area.—Ten square miles of which six are in Class I.

How the two reserves are administered.—These two reserves are administered by the Revenue Divisional Officer and the Tahsildar under the technical advice of the Conservator of Forests, fifth Circle. The regular forest staff consists of a forester and three forest guards.

Cost of administration—

	RS.
Pay of officers—	
Pay of subordinate staff	1,100
Allowances	237
Contingencies	50
Total ...	1,387

Cost under other important heads—

8. (b) Forests—	
Coupe watchers	417
Buildings	120
Other works	82
Total ...	619

Grand Total ... 2,006

52. A Purchase of stores 96

Income from main sources—

By Government agency—

Firewood

By private agency—

Timber 9

Firewood 480

Grazing 336

Other minor produce 2,865

Miscellaneous 5,334

Total ... 9,024

Revenue from unreserved lands 6,961

Total ... 15,985

Add—

March final adjustment 1,101

Total ... 17,086

Surplus ... 14,984

Chief items of work done.—Besides general protection of the area and maintenance of buildings, fuel coupes are worked on contract.

VALPARAI SLEEPER PROJECT.

	Quantity.	Rate.	Amount.
	C. FT.	RS. A. P.	RS. A. P.
Cost of production of B.G. and M.G. sleepers at Pollachi—			
Felling, conversion and sawing charges.			
B.G. sleepers	10,850	2 8 2.7	27,276 6 0
M.G. "	4,968	1 4 2.4	6,271 7 0
Carting B.G. "	14,073	2 1 5.1	29,381 11 0
M.G. "	4,874	0 15 11.4	4,859 0 0
Overhead charges B.G. "	10,850	1 6 2.8	18,530 0 0
M.G. "	4,968	0 11 1.4	
			86,318 8 0
Cost per B.G.		5 15 10.57	..
" M.G.		2 15 3.2	..
Sales.			
Sales at Pollachi—			
B.G. I class	12,469	8 4 0	1,02,869 4 0
II "	197	5 8 0	1,083 8 0
M.G. I "	2,717	3 0 0	8,151 0 0
Rejected sleepers in the forests			60 0 0
" " at Pollachi B.G.	1,174		2,397 11 0
M.G.	130		
Red cedar scantlings No. 1934			2,901 0 0
Do. 170 c.ft. at Rs. 2			340 0 0
a c.ft.			
			1,17,802 7 0

COIMBATORE,
31st August 1931.

K. R. VENKATARAMANA AYYAR,
Acting Conservator of Forests, Fifth Circle.

ANNUAL ADMINISTRATION REPORT OF THE FOREST DEPARTMENT

FOR THE

YEAR ENDING 31st MARCH 1931.

SIXTH CIRCLE

CHAPTER I.—CONSTITUTION OF STATE FORESTS.

1. ALTERATION IN AREA.

1. (i) *Reserved forests*.—The total area at the commencement and at the end of the year was 1,914 square miles.

(ii) *Reserved lands*.—The total area at the beginning and at the end of the year was 34 square miles.

2. FOREST SETTLEMENT.

2. No area was finally settled during the year.

Of the five blocks notified under section 4, settlement is proceeding. In the case of two blocks (namely Kinnanur and Eleri) proceedings were incomplete at the close of the year. In the case of three blocks, namely Panathadi, Aletti East extension and Painikarai draft section 16 notifications have been submitted.

3. DEMARCATION.

3. Nine miles of new boundaries were demarcated during the year, eight miles in the Wynaad division (parts of Ladysmith and Kartikulam reserves and Kallur reserve). One mile was demarcated in the Nilgiris in connexion with disafforestation in the previous year.

The reclearing of boundaries was, as usual, done by subordinates free of cost in all divisions except Wynaad and Nilambur. The year's programme of inspection of political frontiers was carried out.

4. FOREST SURVEYS.

4. (a) *By the Survey of India Party.*—Nil.

(b) *By the Madras Survey Party.*—The party continued its work in the South Mangalore division.

The survey of coupes, regeneration areas, plantations, etc., was undertaken departmentally.

The reference maps were maintained.

CHAPTER II.—MANAGEMENT OF STATE FORESTS.

1. REGULATION OF MANAGEMENT.

Preparation and control of working plans.

5. *Preparation.*—A revised working plan for the North and South Mangalore divisions continues under preparation by the Working Plans Officer; so also the preparation of a plan for the ghaut forests of Wynaad division. For the hill areas in the New Amarampalam reserve of Amarampalam range, Nilambur, a reconnaissance report has been prepared by the District Forest Officer. In the Palghat division, the preparation of a regular plan for the Chenat Nair, Dhoni, Silent Valley and Attapadi reserves is in hand. A revised working plan for the Thadagam, Anaikatti and Bolampatti Block III reserves is pending sanction.

A scheme for Hopea propagation in Udipi range was accorded the Conservator's sanction. A revised scheme for the working of fuel forests of Coondapoor range, North Mangalore division, drafted by the District Forest Officer is to be included within the working plan that the Third Circle are preparing.

Control.—The prescription of the existing working plans and schemes were generally followed. Deviations that occur receive proper sanction.

2. COMMUNICATIONS AND BUILDINGS.

6. *Roads and bridges.*—The total expenditure on 'Capital works' was Rs. 15,065 against Rs. 8,383 in the previous year. Expenditure on repairs was Rs. 21,702 against Rs. 23,504 in the previous year.

The important new works of the year were:—

	RS.
1. Completion of improvements to Boothakkal-Bavali road, Wynaad division	4,352
2. Part construction of a road from Kunhiracada to Maneheri	3,169
3. Improvements to the road from Nadupatti to Varlapadi Coupe IV	2,420

Seven hundred and sixteen miles of roads and bridle-paths and inspection-paths were maintained at a cost of Rs. 21,702. All roads in the Circle were properly cared, and have been kept in good repairs. An exception is the bridges in the Benne-Mudumalai road of the Nilgiri division. These were not fully reconditioned during the year.

7. *Buildings.*—Rupees 30,832 were spent on capital works against Rs. 23,138 in the previous year and Rs. 14,084 were spent on repairs against Rs. 14,613 in the previous year.

The increase under capital works was chiefly in Wynaad and Palghat. The small decrease under repairs is due to restricting expenditure to essentials.

The important new works were:—

	RS.
1. Foresters' quarters at Goonadka, South Mangalore division	1,311
2. Completion of the Assistant Veterinary Inspector's quarters at Nilambur	1,709
3. Construction of quarters for two clerks and two foresters at Nilambur	6,573
4. Construction of forester's quarters at Bey-pore	1,360

8. *Other works.*—Rupees 4,829 were spent on new works against Rs. 521 in the previous year. The increase was in all the divisions except the Nilgiris.

3. PROTECTION OF FORESTS.

(a) *General protection.*

9. The following statement compares the total number of forest offences during the year under report with that of the previous year:—

Cases.	Fires		Felling		Grazing		Other offences.		Total.	
	1929-30	1930-31	1929-30	1930-31	1929-30	1930-31	1929-30	1930-31	1929-30	1930-31
A. Taken into Court.	21	62	151	112	41	21	66	16	262	211
B. Compounded	137	79	816	788	194	247	324	346	1,501	1,460
C. Undetected	109	233	2	..	..	..	..	..	111	233
Total	267	374	1,002	900	235	268	390	362	1,874	1,904
In Reserves	130	257	570	523	235	268	354	313	1,280	1,261
In Unreserves	137	117	432	377	..	..	36	49	605	643

So far as totals were concerned, there was no appreciable increase.

The increase of reserve cases had to do with fires and grazing.

North and South Mangalore and Palghat divisions had numerous fires owing to a long hot weather. The increase under grazing cases was slight, and occurred in the Nilgiris. This was attributed as usual to better protection. Under 'Unreserves,' there was a small increase under 'Other offences.' The reason is not known.

10. *Sandalwood cases.*—In North Mangalore, nine cases were detected, of which five related to breach of Sandalwood Transit Rules and four to sandalwood theft. Of the former, four cases were compounded and one was pending in court; of the latter, all were prosecuted; two of them ended in conviction, one in acquittal and one was pending in court.

In South Mangalore division, there were two cases of transport of sandalwood without permits and they were pending enquiry at the end of the year.

In the Nilgiris, there was only one case of illicit cutting of sandalwood in the Sigur range. It was prosecuted and the case ended in conviction.

11. The percentages of cases detected in reserves and enquired into by Range Officers and District Forest Officers respectively are given below with the total number of cases involved, for comparison:—

District.		By District Forest Officer. PER CENT.	By Range Officer. PER CENT.	Total cases.
North Mangalore	...	2.68	16.07	305
South Mangalore	...	2.2	25.00	352
Wynaad	...	3.0	30.00	33
Nilambur	...	6.6	40.00	15
The Nilgiris	...	0.42	3.2	469
Palghat	...	1.1	9.6	187

Offences that were not enquired into were generally of such a simple nature as not to need investigation.

Of the 912 cases in reserves prosecuted in courts, 49 cases ended in conviction and 43 in acquittal. Of the cases acquitted, 34 were settled by payment of compounding fees in courts. Prosecutions were successful in 90 per cent of the cases. The amount of compounding fees realized was Rs. 15,013 against Rs. 18,345 in the previous year. The average compounding fees realized were Rs. 10-8-0 per case and Rs. 5-9-0 per person.

12. *Patrol system.*—In the Nilgiris, patrol parties were organized thrice during the year. Patrol party was on this special duty for several weeks at a time. In all, 24 offences were detected. In other divisions, it is reported that there was thought to be no need for organizing such special patrols. In Bolampatti range of Palghat division, however, the present District Forest Officer desires to try special patrols in 1931-32.

13. *Rewards.*—In the North Mangalore division, a reward of Rs. 60 was granted to four persons for detecting a sandalwood smuggling case. In the South Mangalore division, Rs. 40 was granted in rewards in bamboo-theft and grazing cases.

(b) *Protection from fire.*

Special protection.

14. The period dealt with is the calendar year 1930.

Early-burning—North Mangalore division.—Early-burning was done only in ghaut forests. The area dealt with was 3,455 acres against 7,103 acres in the previous year: early-burning was not undertaken in Udupi range. It was decided that it was of little use to the surrounding forests which are more or less evergreen and not exposed to danger from fire. The system did not meet with any opposition from the ryot population. There was no fire in the early-burnt tracts.

Wynaad.—Early-burning was confined to Kannothe range. The area concerned was 47,935 acres as in previous year. Rupees 78 was spent on the work. The result was satisfactory as there were no fires in the early-burnt tract.

The only other early-burning done was on grassy hills of Tirunelli and Hilddale reserves. One thousand acres in Tirunelli and 900 acres in Hilddale reserves were dealt with at a cost of Rs. 60. Part of the protection of these two reserves was by clearing and burning of fire-lines at a cost of Rs. 575-4-0. There were no fires in these reserves.

The system of protection by cleared lines and patrols continued in other parts of the Circle. In the Wynaad division, guide lines three feet wide were cut parallel to the Coorg and Mysore frontier and about 100 yards from it; and the intervening strip was burnt.

The Nilgiris.—The operations in the specially protected areas were according to the working plan. Results in the Mudumalai range were not satisfactory, and the proposals for modifying the system were approved by the Chief Conservator in his Proceedings No. 513, Press, dated 7th October 1930. The area specially protected increased from 1,242 square miles to 1,246 square miles.

The area protected successfully during the year was 97·4 per cent against 96·7 per cent in the previous year. Twenty thousand one hundred and sixty-five acres were burnt against 25,100 in the previous year.

The average cost of special protection was Rs. 11-14-0 against Rs. 10-3-0 in the previous year. The cost of early-burning was Rs. 10 per square mile in North Mangalore division and Re. 1-0-8 in Wynaad division. The lowest rate for protection under the old method was in South Mangalore division, viz., Rs. 4-1-0 per square mile and the highest was Rs. 29-9-0 in Nilambur.

General protection.

15. The area under general protection was 441,063 acres and the area burnt was 9,844 acres.

(c) Protection against cattle.

16. The area closed to grazing decreased from 331 square miles to 330 square miles. Three square miles of fuel and catechu coupes in North Mangalore division were opened to grazing; and two square miles of area of new plantations formed and new areas for timber extraction felled in 1930-31 in South Mangalore division were closed.

In Nilambur, the entire forest is closed to grazing. Stray cattle from the adjoining villages continue to do damage to young plantations; however cattle-pound arrangements have been improved so as to cope with the problem.

The area closed to grazing of all animals was 330 square miles: 17 per cent of the total area of reserved forests and lands. The area open to grazing of all animals (except goats) was 82 per cent; and that open to all animals except goats and sheep was 1 per cent.

The number of animals licensed to graze on payment was 23,494 against 121,004 in the previous year. The increase was due to the increase in the number of cattle brought to Kulgunda cattle fair in South Mangalore.

The incidents of grazing in terms of acres per cow unit as reported by the District Forest Officers was:—

					Acreage per cow unit.	
					1929-30.	1930-31.
North Mangalore	...	...	...	...	9·7	10·2
South Mangalore	...	...	...	...	5·8	5·9
Wynaad	...	...	...	...	13·0	14·0
Palghat	...	...	...	...	12·2	14·1
The Nilgiris	...	...	...	...	5·0	5·0

The number of cattle impounded increased from 1,072 to 1,410. The increase was chiefly in the Nilgiri division.

(d) Protection against injuries from natural causes.

17. *Weeds and climbers.*—In the North Mangalore division, climbers were cut in the timber coupes at the time of marking trees for felling. Hopea plants in Someshwar, Jatkanmale and Halesomeshwar and other reserves were freed from climbers during tending operations.

South Mangalore.—Measures against climbers, weeds, etc., were confined hitherto to regeneration areas; but this year the reserves were brought under a systematic programme which divided each guard's beat into five annual portions. The beat guards were made responsible for this work, which was done free of cost.

Nilambur.—Climbers in plantations were cut under the working plan. There was likewise clearing of Loranthus.

Palghat.—Weeds and climbers were cut in coupes about to be felled and in areas under regeneration.

Lantana.—In Wynaad, lantana was uprooted in plantations and around all buildings. Burning of lantana in a test area was also carried out to see if successive annual burning will kill it. This was discontinued after the close of the year as it was doing more harm than good to the forest concerned.

Insects—Wynaad division.—While marking the 1904 plantation in Begur range for thinning, some dead and dying teak trees were observed. Two of these trees had new epicormic shoots close to the ground and healthy leaves on the epicormic branches. The stems concerned had been affected by beetles.

A few insects, two pieces of the bark, and segment of the stem were collected from the apparently dead tree and sent to the Forest Entomologist, Dehra Dun, for identification. The Forest Entomologist identified the borers of *Xyleborus butmali* (the largest), *Xyleborus kratzi*, *Xyleborus noxious* and *Xyleborus semi-granosus*. The matter was thoroughly investigated. The conclusion arrived at was that a group of trees had been first injured by lightning; and that the beetle-attack had come subsequently, affecting dead-wood.

Nilambur.—Mapping of defoliated areas by a special duty forester (who reports to the Forest Entomologist, Dehra Dun) was continued during the year.

In December 1930 in the Nilgiris, severe frost destroyed most of the *Eucalyptus pillularis* plants that had been put out in Coupes IV and V, Brooklands. Severe wind during monsoon also

did some damage to the bluegum plantations. The spike-disease attack in sandal trees, which broke out in 1928 in a portion of Sigur reserved forest, continued. It spread to Bukapuram reserved forest. Steps were taken to safeguard dead sandal trees in the affected areas.

Damage by animals.—In the Wynaad division, pigs continued to damage young plantations. A pig stockade was constructed at a cost of Rs. 66 and attempts to catch pigs were made in Begur plantation, but with very poor results. Government muskets were employed to some extent to mitigate the nuisance.

In Nilambur, wild elephants caused very considerable damage to some young plantations of Amarampalam range especially those of 1929 and 1930. Pigs did damage in a small plantation of the second rotation in Amarampalam range. Monkeys also are in the habit of running up teak stems in very young plantations, and snapping off the tops. This occurs a good deal in Nilambur range. In such young plantations the damaged stems were cut back; but this is expensive, and the monkeys are a veritable nuisance.

In the Madumalai range of the Nilgiris, damage done by wild elephants in teak plantations was also considerable. Deer (together with grazing animals) destroy completely all sandal regeneration that is not protected by thorny bushes in the sandal-wood areas of Sigur range.

In Palghat, occasional visits of wild elephants did some damage to the regeneration; and elephant herds in Kalladikot forest were an affliction to the woodmen and sleeper sawyers.

CHAPTER III.—SYLVICULTURE.

(i) AFFORESTATION AND REGENERATION OF FORESTS.

(1) General progress of areas under regeneration.

18. *North Mangalore.*—Good results are reported in respect of sowings of *Hopea*, *Artocarpus hirsuta* and *Vateria indica* in Someshwar, Jatkatmale and Halesomeshwar reserves.

Regeneration by coppice in fuel and catechu coupes is characterized as fair.

South Mangalore.—All regenerated areas are in satisfactory condition.

Wynaad.—Regeneration under the new working plan was commenced during the year. Sandal with dhall as a temporary host-plant was raised in a ragi ponam crop.

Nilambur.—Regeneration was undertaken over 280 acres—98 acres with teak, 24 acres with broad-leaved mahogany, 16 acres with rosewood, 15 acres with *Artocarpus hirsuta* and *integriolia*, 4 acres with *Hopea parviflora* and 13 acres with *Terminalia tomentosa*. The progress of works of the year was retarded by the cyclonic heavy rain in May 1930. The monsoon also proved an irregular one. The largest area, namely, at Nellikutha, 150 acres, could not be stocked completely owing to the short period of good planting weather available.

The 1930 teak plantation in Ellenjeri, where planting was completed on the first day of the monsoon, has turned out admirably. The stocking at the end of the hot weather of 1931 was 97 per cent and the rate of growth excellent.

The plantation work with mahogany failed, likewise *Terminalia tomentosa* and *Artocarpus*. Rosewood and *Hopea* were successful. The regeneration areas of 1929 are making good progress.

Between 1921 and 1928 the second rotation plantations were disappointing; and it began to be believed that some serious disability was attached to ground that had supported for a rotation a pure crop of teak. As a result of planting experience gained in 1928 and onwards the above view no longer obtains. The improved planting that is now the order of the day owes something to the work of the Third Circle (Research), and a great deal to the present District Forest Officer whose energy and ability merit high commendation.

The Nilgiris.—*Eucalyptus globulus* plantations in Ootacamund and Coonoor ranges continue satisfactory.

The plantations of *Eucalyptus pillularis* in Compartments IV and V, Brooklands, were set back by frost again; and blanks have to be filled with *Eucalyptus globulus*.

Palghat.—The development of coppice and young regeneration continues satisfactory. Good results are to be seen in the teak plantations in Elival and at Walayar.

(ii) Reproduction under working plans or schemes.

Mainly natural.

19. *The Nilairis.*—There is profuse natural reproduction of *Calitris* in Aramby and Cairnhill. *Acacia dealbatta* comes freely from root suckers in the plantations. In Cairnhill Block I, Cypress regenerates itself. There is but little natural seedling reproduction of bluegum in the felled coupes of Aramby and Governorshola.

Mainly artificial.

20. *Wynaad—Begur range*.—The area dealt with was 75 acres. In this area the marketable timber was felled in 1928–29. 'Unmarketables' were cut and burnt, partly in 1929–30 and partly in 1930–31. Teak seeds, soaked in running water for 48 hours were dibbled in April 1930, twelve seeds at each stake. Germination was poor and there was such extensive damage by the cyclonic rains of early May that the whole area had to be planted up with teak stumps. Weeding was done in May, June and July 1930. Grass was cut twice with knife and patch-weeding was done. Ultimate results were 78 per cent stocking. Half an acre in this area was sown with hill paddy; but the stocking of the area was unsatisfactory. The cost of all items of work worked out at Rs. 48 per acre.

Chedleth range.—Area dealt with was 77 acres. The marketable timber was removed from the area in 1928–29, unsaleable timber felled and burnt between February and May 1930 and teak stumps one year old were planted out in June 1930, in crowbar holes. A 'ponam' area of about fifteen acres was cleared thoroughly and all small roots were grubbed out by the cultivators. (First weeding and lantana uprootal was done between the middle of July and August 1930 during which period casualties were also replaced. Second weeding, consisting of grass-knifing, patch weeding round seedlings, and soil working, was done from September to December 1930 and third weeding done in December 1930.) Stocking by April 1931 was 84 per cent.

This plantation is said to be the best raised in the range up to date. Success is attributed to use of large plants for stumps, and to comparative early planting. The cost was Rs. 68 per acre.

A new sandal plantation of 1.4 acres was formed in a crop of ragi. The sandal seeds were sown together with dholl. The ragi yield was poor, but 75 per cent of the sandal seedlings survived. The expenditure incurred was Rs. 107, set off to some extent by the ragi harvest.

In *Beaur range*, in Balegole, an area of 28½ acres was cultivated by Kurumbaras, 24½ acres were planted with teak stumps, and 4 acres were sown with sandal. The percentage of survival in the teak area was 56. In the sandal area, sandal and dholl were dibbled side by side. *Erythrina* seeds were put down at alternate stakes in alternate rows. The survivals of sandal amounted to 30 per cent. Our expenses over the whole area of about 29 acres were at the rate of about Rs. 4 per acre.

The following works were carried out in selection coupes:—

In Selection Circle coupes, openings in the forest, where trees had been felled, were regenerated on the lines prescribed in the working plan, so-called 'runnel' or 'patch' regeneration.

Begur range.—In Selection Coupe I, 68 patches were made. Of these, three were dibbled and three broadcast with *Terminalia tomentosa*, one patch was dibbled with *Pterocarpus marsupium*, and one with rosewood. Two patches were broadcast with rosewood and with *Pterocarpus marsupium* respectively. Fifty-five patches were planted with teak stumps and three with rosewood stumps. Into five patches that had been dibbled with *Terminalia tomentosa*, *Pterocarpus marsupium* and rosewood, teak stumps were also introduced. A few of these stumps were damaged by wild pigs. *Terminalia tomentosa* was a complete failure. Rosewood and *Pterocarpus marsupium* came up fairly well. The cost was slightly under Re. 1 per patch.

Chedleth range.—Patch regeneration of Coupe II, Pavaguddai, was also carried out.

Fifty patches were selected, burnt and planted with teak, *Pterocarpus marsupium* and rosewood seedlings. Ninety per cent of the seedlings survived. Teak did specially well attaining to an average height of 2½ feet. Practically no weeding was necessary in these patches, owing to thorough burning before planting. In several patches, natural regeneration of *Adina cordifolia* was noticed and was allowed to remain. The cost however was high: about Rs. 2–8–0 per patch.

In Coupe I, fifty patches were dibbled with teak at a cost of only two annas per patch: but it has not been reported how far this operation was attended with success.

Nilambur division—Nilambur range—Plantation working circle.—Ellenjeri Compartments 42, 43 and 44 (part) clear-felled in 1929–30, area 40.4 acres, and depot sites in Compartments 81 of Edacode and 41 of Ellenjeri, area 4.5 acres, totalling 44.9 acres (all of the second rotation) were regenerated during the year by planting teak seedlings 6 feet by 6 feet in 40.9 acres and dibbling teak seeds 6 feet by 6 feet after pitting in the balance area of four acres. The dibbling was done in the middle of May.

The result was so poor that the dibbled area was planted, on 20th June, along with the main area, which had not been dibbled.

Casualties were replaced in June-July and August, but very little replacement was found necessary, at any time. The area was weeded three times. The first weeding which consisted of cutting weeds and scraping with mamuties in 4 feet strips (2 feet on either side of the plant rows) was done in July-August; the

second weeding was done in September-October, and consisted of digging with forked mamuties, 2 feet on either side of the plant rows. Heads of small plants were freed and climbers and coppice shoots cut in March 1931.

The expenditure was Rs. 42 per acre; and 97 per cent success was achieved.

Hopea parviflora was planted under the existing crop in the following sub-compartments of the Miscellaneous Felling Series:—

	acs.
Panangode 123 (m)	0.5
Walluvasseri 152 (m)	3.6
	—
	4.1
	—

The planting was done at an espacement of 9 feet by 9 feet in June-July with plants from the nursery raised in 1929. Casualties were light.

In the area planted in 1929, over 46.2 acres in Panangode, Walluvasseri and Old Amarampalem, casualties were replaced in June-July. In all, 9,971 plants were put out during the year, both by way of original planting and replacing casualties. Climbers were cut and heads of plants were freed in March 1931. The expenditure was about Rs. 1-8-0 per acre.

Compartments 236-a, m and 239-m of Old Amarampalam were regenerated, together 29.3 acres. 28.1 acres were leased out for ponam cultivation. Clearing and burning were done by the ponamdars at their expense. The balance area of 1.2 acres was dealt with departmentally as no cultivator wanted it.

Teak stumps were planted over 3.6 acres and rosewood in the rest of the area, the espacement being 8 feet by 8 feet in both the cases. Rosewood stumps were used generally; but where seedlings large enough for stumping were not available, seedlings were planted, two at each stake. Casualties were replaced in July-August-September. In the ponam area no weeding, other than pressing the paddy back, was done. After paddy had been harvested, weeds and paddy stalks were uprooted in 3 feet diameter circles round plants. Climbers, bamboo shoots, etc., were cut in November 1930. In February 1931, survivals amounted to 83 per cent. There is also considerable natural regeneration of *Nydia xylocarpa*. The expenditure was Rs. 15 per acre.

In Compartments 34-m, 35-m and 37-m of Ellenjeri, 15.2 acres where teak of the second rotation had failed (1926 work), lines were cleared through the undergrowth, 8 feet apart, and were staked

feet by 8 feet. Stumps of *Artocarpus integrifolia* and *hirsuta*, and seedlings of *Artocarpus hirsuta* were planted in the undergrowth one foot away from the cleared line. Casualties were replaced in August and enumeration then showed only 57 per cent; but 1930 monsoon was exceptionally bad.

Near Nedungayam, Compartment 321-d, e, f of Karimpoya, a 908 plantation that had been almost a complete failure was cleared in 1929-30. The area, 16 acres, was regenerated in 1930 by dibbling teak seed in pits 6 feet by 6 feet. The dibbling was done between 12th and 15th May. Germination was poor and casualties were replaced in July 1930 with teak plants and again in August-September with teak stumps. The expenditure was Rs. 39 per acre.

The results were poor both as regards stocking and growth; and this was due to poor germination of seed, a poor monsoon, which stood in the way of successful planting of blanks, abnormal weed growth, and also very extensive damage by pits. The latter uprooted large number of plants while feeding on the roots of a grass (*Cyprus rotundus*), which attracted them.

Conversion Working Circle—Nilambur range.—In Panangode, on 24.7 acres marketable timber had been felled in 1929-30. The undergrowth was cleared in 1930; and under the shade of the unmarketable trees mahogany seeds were dibbled 8 feet by 8 feet, six seeds being put at each stake. Casualties in the dry weather were heavy. Survivals were only 26 per cent. The expenditure was Rs. 18 per acre.

15.4 acres of natural forest in Old Amarampalam, felled in 1929-30, were regenerated. 3.4 acres were clear-felled and dibbled with teak, 6 feet by 6 feet, in early May. On the rest of the area unmarketables were left to afford shade, undergrowth was cleared and burnt, and *Terminalia tomentosa* seeds were dibbled at stakes, also in early May.

The germination of *Terminalia tomentosa* was only 30 per cent. Teak however was good, and the area was fully stocked.

Blanks in the *Terminalia tomentosa* area were planted up in July and in two small plots on high ground rosewood was planted. Casualties were heavy in the hot weather and survivals amounted only to 63 per cent. The expenditure was Rs. 32 per acre, including the teak; but for the *Terminalia tomentosa*, it was about Rs. 17 per acre.

Amarampalam range.—145.9 acres in Nellikutha, felled in 1929-30, were regenerated. Teak seeds were dibbled over 100.6 acres

The remaining 50 acres which was producing good coppice growth of teak and other acceptable species was tended at a cost of Rs. 5 per acre. The cost of tending in the previous year had been Rs. 3-6-0 per acre; and the increase in 1930 was due to thick bamboo regrowth which had to be cut and recut several times.

The Walayar teak-planting operations began in about 1926, and have settled down to a routine. Tolerable plantations (compatible with a very third-rate teak locality) are being established. Their importance lies in the situation: on the railway-line close to Coimbatore town.

Bolampatti Ponam Working Circle—Coupe V.—Twenty-eight acres felled in 1929 were cultivated in 1930 by Irulars. They cleared the area and made bunds 12 feet apart; and on these we notched germinating teak seeds from dumps, and elsewhere dibbled *Terminalia tomentosa*, *Albizia* and *Odoratisima* seeds. Eleven acres of teak and 17 of the other species were regenerated there; and weeding was done by Irulars. Departmental expenditure was Rs. 6 per acre.

The 1930 monsoon was poor however and there were hot spells of dry weather which proved fatal to the young teak. *Albizia* was quite successful. *Terminalia tomentosa* germinated badly. This was the fifth coupe that has been regenerated by the above method; and up to 1930 results have not been too encouraging: the areas where artificial regeneration fails become well clothed with mixed coppice regeneration and natural rosewood in places: but only partial success has been achieved in artificial regeneration.

In the coupe of the previous year, the interspaces between the 12 feet apart bunds were filled to 4 feet by 4 feet spacing chiefly by stump planting of teak and the other species. The 1930 season however was adverse. Expenditure was Rs. 9 per acre.

21. *Afforestation.*—Nil.

(iii) *Plantation and other forms of regeneration not under working plans or schemes.*

22. *North Mangalore.*—In Someshwar reserve 65 acres were sown up very successfully with Hopea 9 feet by 9 feet. Expenditure was Rs. 6 per acre. In Halesomeshwar reserve, 7 acres of Coupes VI to VIII on which a fire had occurred were resown with Hopea, 12 feet by 12 feet, at a cost of Rs. 4 per acre.

In Someshwar reserve Coupe V, 30 'gaps' or 'funnels' or 'patches' amounting to 4½ acres were selected. They were dibbled with teak, Xylia and rosewood seeds at an espacement of

feet by 4 feet. The total expenditure was at the rate of Rs. 27 per acre of actual patch regenerated: or thirty patches at Rs. 4 each. The percentages of success are reported to have been—

Rosewood	11
Teak	50
Xylia	20

and presumably the count was done after the expiry of the 1931 hot weather, though this has not been stated.

South Mangalore division.—Thirty acres in Coupe V, Parappa, clear-felled and burnt in 1929 were sown with teak in 1930, 6 feet by 6 feet. This area was not considered fit for Hopea, but is well suited for teak. Casualties were replaced by use of germinating seeds from a dry nursery. The sowing was done in May and June 1930. Survivals by March 1931 were 79 per cent and expenditure was Rs. 30 per acre.

In Sampaie reserved forest, an area of 26½ acres clearfelled and burnt in 1929-30 was regenerated with teak, on similar lines. Expenditure was Rs. 38 per acre.

Another 4-acre area in the same reserve was regenerated by sowing in May and by filling blanks by planting in June and July, at a cost of Rs. 43 per acre. It is reported that the 1929 teak plantation (our first venture with teak planting in this locality of recent years) is doing very well.

Mujur reserved forest.—Over 23 acres on the northern slope of Coupe I, Hopea seedlings were planted in wide strips. The espacement of the plants was 9 feet by 9 feet. In the rest of the area, over 132 acres, in gaps where trees had been felled, Hopea transplants were put out at 9 feet intervals. The cost was under Rs. 2 per acre.

During June and July 1930, strips 1, 3 to 5 of Aletti coupe of 1929 where natural regeneration was absent were sown with Hopea and *Artocarpus*. Casualties were replaced with seedlings. The result was a success, failures being under 5 per cent. All the natural regeneration throughout the whole area was tended. Tending included climber cutting and a thinning of the 'middle-storey' tree growth so as to admit additional light. No tending of Hopea areas in Jalsur and Parappa reserves was found necessary: they are described as thriving.

Wynaad division.—In the Peria reserve regeneration of gaps, formed in the course of fellings for sleeper extraction, was undertaken during the year. This was the principal sylvicultural work.

In the 1925, 1927 and 1929 felling areas, about 75 gaps were dealt with in each.

Different espacements, 4 feet by 4 feet, 6 feet by 6 feet and 9 feet by 9 feet, were tried. *Artocarpus* seed was dibbled first, but this was not successful as the fleshy cotyledons of the seedlings attracted rodents. Casualties were therefore replaced with transplants in September 1930. They looked well during rains but did not survive the hot weather.

In February 1931, *Mesua* seeds were dibbled where *Artocarpus* had failed. They were found to have germinated at the beginning of the 1931 monsoon. The expenses were a little below Re. 1 per gap treated.

The District Forest Officer concludes that gaps should be regenerated as soon as they are formed as otherwise there is considerable regrowth that impedes regeneration. If this were followed out it would seem to mean restricting fellings to the rainy season. He thinks further that *Artocarpus* transplanting is more successful than sowing in situ: also that *Artocarpus* seed collected in the evergreen forest itself has greater vitality than seed brought in from the plains near by. Also that evergreen species should be relied upon, rather than *Artocarpus*, in small gaps where light is inadequate.

Natural regeneration of valuable species such as *Mesua*, *Cedrela toona*, and *Dichopsis elliptica* was found to be present to a satisfactory degree; and sleeper operations have been followed by the appearance of cardamoms, in Peria reserve.

The Nilgiris.—Two acres of grass land in Krurmund were planted with blue gum; but failed owing to late planting. Six plots of grassy land, one-fourth of an acre each, on the banks of Avalanche stream, were sown in worked patches with *Betula alnoides*. Sowing was a failure; and probably planting will be more successful. This species has been tried in the Nilgiris: is a fast grower: and produces a white wood stated by the Imperial Forest Research Institute to be excellent for three-ply purposes.

Palghat division.—Planting of teak stumps and dibbling of teak seed was continued in the Chenat Nair forest. Dhoni Fuel Series, Coupe II of 23 acres, and Elival Coupe III of 35 acres were planted, 6 feet by 6 feet. In both of these the percentage of success by June of 1931 was over 80 and the average cost about Rs. 43 per acre for the first year's work.

In gaps made in the Silent valley evergreen forest by selection fellings for sleepers, regeneration operations were carried on, as in previous years. In 1930, 700 acres of Coupe II and 40 acres of Coupe I were dealt with. The size of the gaps varies greatly of course; and as the light varies correspondingly, large gaps, medium gaps and small gaps are accorded different treatments.

In large open gaps, *Acrocarpus* was dibbled in prepared patches, 9 feet by 9 feet, 6 to 12 seeds per patch. In medium gaps, *Artocarpus* and *Hopea* were sown. In gaps very deficient in light no sowings were done; but the existing valuable natural seedlings such as *Mesua*, *Dichopsis elliptica* were tended.

The number of prepared patches (in which sowing was done) per gap varied with the size of the gap. One hundred and thirty-one gaps were sown with *Acrocarpus*, about ten patches per gap. One hundred and two gaps were sown with *Hopea parviflora* (about five patches to the average gap), and 92 with *Artocarpus hirsuta*.

Germination of *Acrocarpus* and *Artocarpus* was reported to have been satisfactory, the percentages of success being 93 and 80 respectively. *Hopea* was a complete failure; no germination at all.

Except for *Hopea*, the regeneration is stated to be promising. This is encouraging news, for the regeneration of the previous year had occasioned disappointment, particularly in connexion with *Acrocarpus* on the success of which we had banked heavily.

It should be understood that the artificially introduced plants are but a small minority in the gaps. These fill up rapidly with a mixture of evergreen tree-species, useful and otherwise, and with weeds of all kinds. The latter include a liberal admixture of a dangerous plant, the Devil's Nettle.

(iv) (a) Tending areas under regeneration.

23. *North Mangalore.*—Areas regenerated with *Hopea* in 1929 and previously in Someshwar, Jatkatmale and Halesomeshwar, and catechu areas in Baindur, Madaregudde and Honnakodlu reserves were tended. Weeding, clearing low shade and replacing casualties were done as required. Nearly 3,000 acres were dealt with at a cost of nine annas per acre.

South Mangalore.—No tending of *Hopea* areas was necessary as they had been tended in previous years.

Wynaad.—Tending of plantations was carried on according to programme. In Begur and Chedleth ranges, 564 and 292 acres respectively were tended. The operation included casualty replacement, grass-knifing, freeing of smothered plants, soil working, inspection path clearing, thinning, etc.

Nilambur—Plantation Working Circle.—Fifty-six acres of 1929 plantation were tended at a cost of Rs. 15 per acre. The Edacode and Ellenjeri compartments were 46 acres out of the above 56. The second-year treatment was as follows: they were clean weeded in strips in May and early June. Boga was sown along the edges of the weeded strips. The teak plants were pruned and casualties

replaced in June. Climbers were cut and small plants were weeded in September 1930. A further climber cutting and knife-weeding of small plants were done in November 1930. *Tephrosia candida* (Boga) suppressing teak was cut back in January 1931.

Casualties were replaced; the plants were weeded at a cost of Rs. 50 or Rs. 5 per acre. There was very little weed growth in the area, the soil being loose and sandy, so the usual tending done in respect of Nilambur plantations was found unnecessary in this case.

In part of Ellenjeri, 5 acres and in Edacode Compartment 57, 14 acres, where the teak crop was from coppicing the teak of the first rotation, coppice shoots were tended at a cost of about ten annas per acre.

Conversion Working Circle.—Erambadam 1929 area, 49 acres, was tended at a cost of Rs. 11 per acre. The plantation has grown well.

Erambadam 1928 area, 9 acres.—The plantation was burnt accidentally in February 1930. The plants damaged by fire were coppiced. Pruning and climber-cutting were done in June-July. Excess coppice shoots were cut back in October. The expenditure was Rs. 5 per acre.

Amarampalam range.—In the Pullimunda 1929 area, 121 acres was tended at a cost of Rs. 9 per acre. Teak plants were pruned and damaged plants cut back in April 1931. Casualties were replaced. A knife-weeding was done between July and September. There was considerable damage by wild elephants and broken stems were cut back. Despite heavy damage by elephants, the growth is very good. The area that had been regenerated under 'ponam' cultivation and had been planted with teak stumps is the best of all.

In Mundakadava 1928 area, 85 acres, climbers were cut and damaged plants were cut back at a cost of about Rs. 2 per acre. The plantation is coming on satisfactorily.

Palghat—Weeding.—Weeding and climber cutting were done in the artificially regenerated areas in Sappal, Elival and Dhoni. Also in the Walayar plantations; and in Bolampatti Ponam Working Circle.

Clearing and climber-cutting were done by subordinates free of cost over 1,016 acres of fuel and timber coupes.

Clearing and cutting bamboo regrowth were done over 497 acres in the Pole Working Circle at Walayar at a cost of about Re. 1 per acre.

Clearing and climber-cutting in the fuel coupes was carried out according to working plan prescriptions.

(iv) (b) *Tending of growing stock.*

24. *North Mangalore.*—Climbers in timber coupes were cut at the time of marking trees for felling.

Tending of sandal was done by subordinates free of cost in Nujinane, Mavinaguli and Vorwady reserves, the area gone over being 2,743 acres.

South Mangalore.—Natural regeneration in Coupes I and II of Nalkur (1,030 acres) was tended at a cost of about seven annas per acre.

Natural regeneration in Jalsur East was also visited.

Nilambur—Plantation Working Circle.—Thinning, cutting climbers, clearing *Loranthus* and cutting of bamboos that were interfering with teak were done according to working plan over 580 acres. Thinning and cutting climbers were done in Edacode 1923 plantation over 14 acres at a cost of Rs. 33. Climber, *Loranthus* and bamboos injurious to teak were cut over 719 acres of Chatham-borai and Old Amarampalam plantations at a cost of nine annas per acre. *Loranthus* on teak was cleared in 285 acres of Karimpoya and New Amarampalam reserves at a cost of eight annas per acre. Climbers were cut over 423 acres of second rotation plantations at a cost of thirteen annas per acre.

Conversion Working Circle.—Ninety-five acres in Walluvasseri 1924-A and Karimpoya 1923—young plantations—were thinned at a cost of Rs. 3 per acre. In Old Amarampalam 1926 plantation, on 35 acres climbers were cut. The 1926 *Pterocarpus marsupium* and rosewood area in the same reserve, 13 acres, had an intensive clearing. In Karimpoya and New Amarampalam, over 609 acres, climbers and bamboos were cut; and teak plants damaged by wild elephants were cut back at a cost of twelve annas per acre. Thinning, improvement felling and cutting climbers were carried out in 433 acres containing a natural pole crop of superior species in Subsidiary Coupe III at a cost of about Rs. 1-8-0 per acre.

In coupes worked for *Xylia* sleepers, climbers on standing growth of valuable species were cut over 888 acres at a cost of five annas per acre.

Beyapore coconut tope was tended at a cost of Rs. 2,144. The operations included ploughing the tope continuously throughout the year, manuring with ash, bonemeal, lime and leaf manure. Incidentally the attention that has been given to this plantation in the last five years has completely changed its appearance. It is now a credit to the Forest Department, and to the Agricultural Department who have been extremely helpful in advising us.

The Nilgiris.—In Coonoor range, sandal Coupe VI of 81 acres was tended. In Sigur range, tending was done in Coupes V and VI in those portions where the stock is dense. Climbers on sandal trees were cut by subordinates on their rounds. In Governor-shola and Arambi, cutting back damaged seedlings was done in two compartments by the beat guards.

Palghat.—Climbers were cleared out on an area of about 200 acres in Coupe III, Silent Valley, at a cost of about eight annas per acre.

(v) *General—Underplanting, improvement fellings, etc.*

25. *Nilambur.*—In failed areas of the second rotation there were various measures aimed at improvement: planting of cuttings of *Vitex negundo*, sowing of bamboo, and sowing Boga (*Tephrosia candida*) in cleaned strips, 2 feet wide and spaced 4 feet apart. The latter work has been successful. Elsewhere in the older plantations with the aim of suppressing coarse grasses, and in order to provide material for a good burn, there was planting out of *Vitex* cuttings, *Macaranga* plants, and broadcast sowing of bamboo. The expenditure incurred was petty.

Natural regeneration of all tree species was freed from weeds and climbers over 145 acres in Walluvasseri and Karimpoya at a cost of about eight annas per acre.

Wynaad.—*Artocarpus hirsuta* and *Xylia* that had been underplanted into the 1901 and 1902 plantations at Begur were tended.

Climber-cutting was done over 1,262 acres of Coupes I and IV of the Improvement Felling Working Circle of Sultan's Battery range, and in selection and subsidiary coupes of Begur range.

In 625 acres of natural forest in Sultan's Battery Range Coupe II, Improvement Working Circle, selection and improvement fellings were carried out.

The Nilgiris.—Selection and improvement fellings were done over 1,107 acres in Compartment 27 of Mudumalai. Benne teak plantation was thinned and 532 poles were extracted.

CHAPTER IV.—EXPLOITATION.

26. Timber in the sale depots at Beypore, Nanjangod and Kasaragod were transferred to the control of the District Forest Officers during the year.

The Forest Utilization Officer continues to be in charge of sawn materials. Overseas trade was continued and a quantity of 3,740 cubic feet was sent from the Wynaad division. This was composed

of 203 cubic feet of rosewood and 3,537 cubic feet of laurel. The average net realization was Rs. 2-7-10 per cubic foot. The highest rates were Rs. 4-5-11 for laurel and Rs. 6-5-11 for rosewood.

From Nilambur, 778 cubic feet of laurel (*Terminalia tomentosa*) and 135 cubic feet of pillamarudu (*Terminalia paniculata*) were despatched to Europe. Expenditure was Rs. 2,196 and receipts so far amounted to Rs. 1,877.

Sleeper supply was continued. The operation was spread over all divisions, except the Nilgiris. The total supply from the Circle was 20,312 broad gauge and 41,132 metre gauge sleepers compared with 23,611 broad gauge and 6,160 metre gauge sleepers in the previous year. There has thus been a considerable increase in metre gauge sleepers. Ordinarily, no teak sleepers are supplied, but some seventh and eighth class poles were converted into sleepers in Nilambur.

The Railways have now declined to accept any second-class sleepers.

27. The attached statement shows details of supplies. The percentage of rejections shows improvement in regard to Hopea and a slight increase in Xylia. This was due to strictness in passing. The final passing is done by officers of the department:—

Name of division.	Size of sleepers.	Hopea.		Xylia.		Mesua.		Teak.		Total.		Percentage of rejections.
		Number presented.	Number passed.	Number presented.	Number passed.	Number presented.	Number passed.	Number presented.	Number passed.	Number presented.	Number passed.	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Mangalore, North	B.G.	1,223	1,143	329	250	..	..	..	..	1,552	1,393	10.2
	M.G.	5,369	5,047	358	260	..	..	..	..	5,727	5,307	7.3
Mangalore, South	B.G.	2,221	2,069	79	69	..	..	..	..	2,300	2,138	7
	M.G.	470	410	4,975	4,335	..	..	..	..	5,445	4,775	12.3
Wynaad	B.G.	..	..	..	..	2,097	1,998	..	..	2,097	1,998	4.7
	M.G.	..	..	..	..	2,863	2,756	..	..	2,863	2,756	3.7
Nilambar	B.G.	76	76	3,902	3,422	303	293	12	12	4,239	3,809	11.4
	M.G.	19	19	13,143	11,995	97	93	762	735	14,021	12,842	8.4
Palghat ..	B.G.	..	..	298	276	12,080	11,407	..	..	12,378	11,683	6.6
	M.G.	..	..	1,416	1,287	17,121	16,690	..	..	18,537	17,977	3
Total	B.G.	3,520	3,288	4,608	4,017	14,486	13,704	12	12	22,626	21,021	7.1
	M.G.	5,858	5,506	19,892	1,7877	20,081	19,539	762	735	46,593	43,657	6.3

NOTE.—(i) South Mangalore and Palghat figures include some sleepers extracted in 1930-31 but disposed of as part of 1931-32 supply as below—
Palghat—703 broad gauges and 2,127 metre gauges. South Mangalore—398 metre gauges.
(ii) The Forest Utilization Officer made also a private contract arrangement for the supply of 3,428 broad gauges and 2,170 metre gauges at Kallai. These have not been included in the statement.
(iii) The percentage of rejections for the various species was as under:—

	B.G.	M.G.
Hopea	6.6	6
Xylia	12.8	10.1
Mesua	5.4	2.7
Teak	..	3.5

28. As stated in the last year's report, it is not practicable to present in a few simple figures the financial aspects of the sleeper operations. But for sleeper operations extraction of timber would not have been possible at all in some cases. Mesua timber for example cannot be extracted in the log and sold in Kannothe range of the Wynaad division and in the Silent valley, Palghat division.

The following details are furnished:—

North Mangalore.—Sleepers extracted are supplied at Mangalore.

	C. FT.	RS.
Logs converted	25,449	
Yield of passed sleepers—		
Broad gauge	No. 1,393	
Metre gauge	5,307	
Other sawn materials	2,377	
Revenues—		
Selling, sawing, dragging and transport to sale depots	18,785	
Charges for passing by the Forest Utilization Officer, say 4 annas per broad gauge and 2 annas per metre gauge sleeper.	1,013	
Total	19,798	
Revenue realized (or expected)—		
Sleepers (including rejections)	27,644	
Other sawn materials	4,648	
Total	32,292	
+ Rs. 16,404. This means that an average profit of 8 annas per cubic foot of timber used, was realized. This includes all wastage in sawing.		

South Mangalore.—Sleepers were supplied at two centres Kasaragod and Mangalore—

	C. FT.		RS.
Logs sawn ...	41,481		
Sawn yield of passed materials—			
Broad gauge ... No. 2,138			
Metre gauge ... „ 4,775			
Scantlings ... „ 5,871			
Expenditure—	RS.		
Expenditure on felling, dragging and transport ...	25,543		
Charges for passing by the Forest Utilization Officer at 4 annas per broad gauge and 2 annas per metre gauge for sleepers supplied at Mangalore ...	244		
Forest Utilization Officer's charges for sleepers handed at Kasaragod ...	2,641		
Forest Utilization Officer's charges for scantlings, 5,872 cubic feet, say at 4 annas per cubic foot ...	1,468		
	29,896		
Revenue from sleepers and scantlings ...	39,709		
Net + Rs. 9,813, or 4 annas per cubic foot of log.			
There is a fall as compared with last year. The District Forest Officer has not commented on this.			

Wynaad.—The District Forest Officer, Wynaad, has not sent a statement of financial results. Sleepers are put on rail at Telli-cherry. The work followed the same lines as in 1929. The following details are furnished:—

	RS.		RS.
Sleepers presented—		Revenue on passed sleepers—	
Broad gauge ... No. 2,097		1,998 at Rs. 8 4 0 ...	16,433
Metre gauge ... „ 2,863		2,756 at Rs. 3 0 0 ...	8,268
Production cost—			
At Rs. 6-4-0 per broad gauge and at Rs. 2-15-0 per metre gauge.	13,106	Total ...	24,701
	8,410		
Total ...	21,516	Net + Rs. 3,185.	

The felling for sleepers took place in Kannothe range, evergreen forests, and were solely in connexion with sleeper operations. Extraction in log form has not yet been found to pay.

Nilambur.—Sleepers are supplied on rail at Nilambur. The details furnished in the report show the following:—

	Cost of production per cubic foot.	Sale rate per cubic foot.	Profit.
	RS. A. P.	RS. A. P.	RS. A. P.
Nilambur range ...	1 8 10	2 3 7	0 11 3
Amarampalam range ...	1 9 11	2 3 7	0 9 8

The information furnished does not enable the profit per cubic foot of timber in the log to be calculated.

Palghat.—Sleepers were supplied at two centres, viz., Melattur and Olavakkot.

	C.F.T.	
<i>Silent valley</i> —		
Logs converted ...	90,100	
Yield—		
Broad gauge No. ...	9,667	
Metre gauge „ ...	10,822	
	RS.	
Expenditure on works ...	66,580	
Charges for Forest Utilization Officer's passing at 4 annas per broad gauge and 2 annas per metre gauge ...	3,770	
Total ...	70,350	
Revenue on passed sleepers 9,095 broad gauge + 12 second class and 9,918 metre gauge + 12 second class = Rs. 1,04,509.		
Surplus Rs. 34,159 or 6 annas per cubic foot of log.		

	C.F.T.	
<i>Kalladikode</i> —		
Logs converted—		
Mesua ...	37,059	
Xylia ...	8,194	
Poon and Pali (<i>Dichopsis elliptica</i> logs) ...	48,568	
Miscellaneous logs ...	11,347	
Yield—		
Broad gauge No. ...	2,711	
Metre gauge „ ...	8,719	
Kolmarams ...	9,270	
Vittams ...	8,620	
	RS.	
Expenditure on works ...	45,914	
Passing charges ...	1,768	
Total ...	47,682	
Revenue on—		
Sleepers ...	45,811	
Kolmarams, vittams, etc. ...	27,288	
Total ...	73,099	
Net + Rs. 25,417 or 4½ annas per cubic foot of log.		
No extraction in the log is practicable in the case of Mesua.		

(a) SYSTEM OF MANAGEMENT.

(i) Major Forest Produce.

29. The subjoined statement shows the areas exploited during the year under different silvicultural systems:—

	Area in acres.	
	For timber.	For fuel.
Clear-felling	535	5
Selection fellings (including subsidiary fellings)	5,594	...
Xylia sleeper fellings in Nilambur ...	570	...
Miscellaneous fellings (i.e., removal of dead and top broken trees in Nilambur division)	260	...
Improvement fellings	1,526	...
Coppice with standards	...	4
Simple coppice	...	1,262
Total ...	8,485	1,271

Bamboo fellings.—17,935 acres.

Sandal fellings.—Selection fellings of sandal took place in the unreserves and kumaki lands of South Kanara. In the Nilgiris, there were regulated fellings for sandal, and also unrestricted fellings on areas affected by spike disease.

Timber.—Details of areas worked for timber are as shown below:—

South Mangalore—Clear-fellings.—Ten acres in Sampaje reserve were clear-felled, the yield being 336 cubic feet per acre.

Wynaad.—Eighty acres in Coupe III, Begur and 75 acres in Coupe III, Chedleth. (The yield has not been specified.)

Nilambur.—One hundred and ninety-four acres of natural forests in Amarampalam range were clear-felled, the outturn being 122,945 cubic feet or 634 cubic feet per acre. Seventy acres of natural forests in Nilambur range were clear-felled the yield being 20,543 cubic feet or 293 cubic feet per acre. Twenty-one acres of teak plantations in Amarampalam range were finally felled, the yield being 10,619 cubic feet, or 506 cubic feet per acre. Forty-five acres of plantation were felled in Nilambur range, the yield being 57,663 cubic feet or 1,281 cubic feet per acre.

The Nilgiris.—Forty acres of natural forest in Mudumalai range were clear-felled, the yield being 13,773 cubic feet or 344

The following shows details of areas dealt with under selection and improvements fellings:—

Selection fellings (including subsidiary fellings).

	ACRES.
North Mangalore	409
South Mangalore	310
Wynaad (Begur and Chedleth ranges)	905
Kannoth range—Sleeper felling in Peria reserve, about	700
Nilambur	570
Palghat sleeper fellings	2,700
Total ...	5,594

Improvement fellings.

The Nilgiris (Mudumalai range)	1,106
Wynaad (Sultan's Battery range)	420
Total ...	1,526

Thinnings.—In Nilambur, thinnings were carried out over 689 acres of teak plantations, the yield being 119,635 cubic feet.

In the Nilgiris, Block I, Compartment I, Arambi, 4 acres (*Eucalyptus eugenioides*) was thinned the yield being 2,400 cubic feet.

Fuel.—Fuel coupes were worked in all divisions except Wynaad and Nilambur. The area dealt with was 590 acres in North Mangalore, 42 acres in South Mangalore, 46 acres in the Nilgiris, and 584 acres in Palghat.

In the Nilgiris, Muthinad Compartment 2 was worked under the system of coppice with standards. Five acres of compartment 6, Brooklands containing *Acacia* were clear-felled, the yield being 34,080 cubic feet or 6,816 cubic feet per acre. The rest of the fuel coupes in the Circle were worked under "simple coppice."

Sandalwood.—The outturn was $6\frac{3}{4}$ tons in North Mangalore, $3\frac{3}{4}$ tons in South Mangalore and 22 tons in the Nilgiris.

(ii) Minor forest produce.

30. *Minor forest produce.*—This was leased, as usual, to contractors everywhere except in the Mudumalai range of the Nilgiris. Hopea bark was extracted departmentally in North and

South Mangalore and supplied to Messrs. Gordon, Woodroffe & Co. for tanning purposes. There was no sale of catechu trees in North Mangalore this year.

Bamboos.—Bamboos are collected departmentally for floating purposes in Nilambur. Also 6,075 bamboos were extracted departmentally in Bolampatti range to provide work for the Irulars. Bamboo coupes were leased in South Mangalore, Palghat and the Nilgiris. There were no leases in North Mangalore and Wynaad.

Fodder grass.—The Military Department harvested grass in Walayar reserve, the quantity collected being 46½ tons.

Grazing.—This was regulated as usual by issue of permits. The revenue realized was Rs. 29,300.

(b) AGENCY OF EXPLOITATION.

31. Departmental extraction was confined generally to timber and sandalwood. Fuel in the Nilgiris, and minor forest produce in the Mudumalai range of the Nilgiris were collected departmentally. So also bamboos for departmental purposes in Nilambur.

As in the previous year, Mesua, Hopea and Xylia were converted into sleepers.

About 250,000 cubic feet of logs were converted into sleepers.

Nearly 49,000 cubic feet of Poon (*Calophyllum*) and Pali (*Dichopsis elliptica*) extracted from the Kalladikode valley (Palghat division) were converted into cart materials (kolmarams and chattams) and transported for sale. Vittams (rough squared timber) converted from *Artocarpus hirsuta*, *Dysoxylon*, jack, rosewood, and venteak (*Lagerstroemia*) were likewise transported for sale to Olavakkot, the quantity being about 11,000 cubic feet. The sale of logs is dealt with below. As stated at the commencement, all the log depots were under the control of the District Forest Officer at the end of the year.

North Mangalore.—Nearly 28,000 cubic feet of logs were sold during the year. The District Forest Officer has not offered any remarks on the market conditions.

South Mangalore.—There were two depots, one at Mangalore and the other at Kasaragod. Nearly 30,000 cubic feet of logs and 38,000 cubic feet of sawn timber (of which 34,000 cubic feet was by the Forest Utilization Officer) were sold during the year. The timber market was dull.

Wynaad.—The sales effected by the Forest Utilization Officer were 12,500 cubic feet of logs and 19,000 cubic feet of scantlings. The District Forest Officer has not furnished information in regard to his own sales.

Nilambur.—The sale of logs in Beypore depot amounted to over 300,000 cubic feet. The sale of sawn materials amounted to 11,000 cubic feet.

The Nilgiris.—The sale during the year amounted to about 15,000 cubic feet. A small stock was disposed of at Nanjangod this year also.

Sandalwood.—The following shows the sales:—

	TONS.	QRS.	RS.	
North Mangalore ...	6	65	9,196	at Rs. 1,000 per ton for wood and Rs. 400 for chips.
South Mangalore ...	3	64		
Total ...	10	49		
The Nilgiris—				
Masinigudi ...	20	76	12,195	at Rs. 750 per ton for wood and Rs. 166 per ton for chips.
Coonoor wood sold at Satyamangalam, including previous year's stock ...	2	47	1,670	at Rs. 790 per ton on the average.
	23	43	13,865	
Total ...	34	12	23,061	Total.

Fuel.—As in the previous year, fuel was cut and sold to contractors in bulk in the Nilgiris. There was no retail sale.

Minor forest produce.—In addition to the usual collection in the Nilgiris, 40 tons of Hopea bark was collected in North and South Mangalore and supplied to Messrs. Gordon, Woodroffe & Co.; but the transaction was unremunerative and the firm had the contract terminated. Ivory collected was disposed of through the District Forest Officer, South Coimbatore. Revenue realized for ivory for South Mangalore division was Rs. 311 and for Wynaad Rs. 25.

(ii) By purchasers.

Major produce.

32. **Timber.**—This was generally confined to the removal of a few dead trees and windfalls.

In Nilambur, as in the previous year, in the Nellikutha clear-felling area, 194 acres, the right of working inferior junglegrounds and rejections was sold. Twenty-eight thousand three hundred and one cubic feet valued at Rs. 2,368 was removed. The right to make spokes and felloes out of rejected teak top ends of the final felled area in Nilambur range was sold—the quantity removed was 560 cubic feet valued at Rs. 340.

Fuel.—Fuel coupes were sold standing in North and South Mangalore, in Palghat and in Coonoor range (Nilgiris). The depression in tile trade continued in Mangalore, affecting the sale of fuel coupes.

The Badagas on the Nilgiris continue to remove dry fuel on permits at Re. 1 per house.

Bamboo coupes were leased out in South Mangalore, Palghat and the Nilgiris.

Minor forest produce.

33. *Minor forest produce.*—This was leased out to contractors. The Dhupa (*Vateria Indica* fruit) lease in all divisions except Nilambur and the Nilgiris continued to be in force; but suffered like everything else from the depression in trade.

(iii) & (iv) By right-holders and free-grantees.

34. The subjoined statement shows the produce removed by free-grantees and right-holders:—

	Timber in thousands of cubic feet.	Value.	Fuel in thousands of cubic feet.	Value.	Bamboos. Value.	Grazing Value.	Other minor forest produce. Value.	Total Value.
		RS.		RS.		RS.	RS.	RS.
Free-grantees	2	610	..	..	118	182	21	931
Right-holders	16	7,355	14	516	..	399	..	8,270
Total	18	7,965	14	516	118	581	21	9,201

Outturn and sources of forest produce.

	Timber in thousands of cubic feet.		Fuel in thousands of cubic feet.		Bamboos. Value.		Grazing and minor forest produce Value.	
	1929-30.	1930-31.	1929-30.	1930-31.	1929-30.	1930-31.	1929-30.	1930-31.
Government agency.	1,257 * 217	1,211	{ 565 * 110 }	677	RS. 10,748	RS. 11,215	RS. 4,914	RS. 5,083
Purchasers	230	139	1,675	1,939	18,554	18,216	73,858	60,904
Free-grantees	3	2	..	..	16	118	1,077	602
Right-holders	17	16	6	14	..	..	..	..
Total	1,507 * 217	1,388	2,246 * 110	2,630	27,318	29,549	79,649	66,589

* Chenat Nair figures.

Timber.

35. The output of the year shows a fall of 46,000 cubic feet as compared with last year (exclusive of Chenat Nair figures). Important variations were a decrease of 118,000 cubic feet in South Mangalore due to closure of Parappa mill and curtailment of fellings owing to large stock on hand: a decrease of 100,000 cubic feet in Nilambur, due to postponement of subsidiary fellings: an increase of 114,000 cubic feet in Palghat due to expansion of operations in Silent valley and the addition of Kalladikode operations: increase of output of 30,000 cubic feet in Wynaad and of 26,000 cubic feet in the Nilgiris, due to the yield being higher than the areas allotted were expected to give.

Purchasers—Timber (—91,000 cubic feet)—

Reserves	— 76,000 cubic feet.
Unreserves	— 15,000 ..

Reserves.—Of the decrease of 76,000 cubic feet, 72,000 cubic feet pertains to Palghat; and is attributed to the low yield in Coupe V, Pole Working Circle and also in other fuel coupes. Wynaad also shows a fall of 12,000 cubic feet and this is attributed to restricted sale of dead trees from reserves. Against this, there is an increase of 10,000 cubic feet in North Mangalore for which no adequate explanation has been furnished.

Unreserves.—The decrease occurred in North and South Mangalore. This relates to assignments of land on darkhast.

Fuel.

36. *Government agency.*—Leaving out of consideration the Chenat Nair figure, since operations there have stopped, there is an increased output of 112,000 cubic feet. There is an increase of 174,000 cubic feet in the Nilgiris attributed to larger yield in the area worked under the revised working plan. There was however a reduction of 40,000 cubic feet in Nilambur due to there being no departmental fuel operations; and a decrease of 22,000 cubic feet in North and South Mangalore due to the fact that fellings in indicator areas were not found necessary.

Purchasers (+ 264,000 cubic feet)—

Reserves	+ 261,000 cubic feet.
Unreserves	+ 3,000 ..

Reserves.—There was a large increase in North Mangalore (453,000 cubic feet) attributed to greater yield in the coupes worked. Against this, there was a decrease in output of 90,000 cubic feet in South Mangalore and a like quantity in Palghat, attributed to a coupe not being worked in the former, and to low yield in the latter.

Unreserves.—There is no significant variation. There is an increase in Palghat and the Nilgiris and a decrease in North and South Mangalore.

Bamboos.

37. *Extracted by Government agency.*—Revenue increased by Rs. 467. The increase was connected with bamboos extracted with a view to provide work for Irulars in Bolampatti range, Palghat division.

Purchasers.—Revenue increased by Rs. 1,662. A better price was realized for Singapathi bamboo coupe in the Palghat division.

Grazing.—The number of cattle admitted to graze on payment was 123,494 against 121,004 in the previous year. The variation is insignificant.

Minor forest produce (including grazing value).

38. *Government agency.*—Revenue increased by Rs. 169.

Purchasers.—Revenue decreased by Rs. 12,754. This was chiefly in North and South Mangalore divisions and was due to poor prices realized for minor forest produce farms. A similar fall occurred in Palghat and Wynaad divisions. There was a slight fall in grazing revenue due to cattle mortality.

Free-grantees.—The decrease in the value of produce removed by free grantees is due to the fact that free removal of metal, etc., by the Public Works Department was not allowed during the year.

CHAPTER V.—FINANCIAL RESULTS.

39. The following statement shows the revenue and expenditure of the year together with comparative figures of the previous year :

Revenue.			Expenditure.		
1929-30.	—	1930-31.	1929-30.	—	1930-31.
Rs.		Rs.	Rs.		Rs.
As in Form No. 39 ..	11,06,020		As per Form No. 39—		
Credited in Fifth Circle ..	1,670		8-b. Conservancy. Main-		6,22,411
and pertaining to ..			tenance and Rege-		
Nilgiri sandalwood ..			neration.		
sales ..			c. Establishment ..		4,77,054
Minor Forest Produce ..	350		Capital outlay ..		—12,246
Ivory ..	336				
Chenat Nair figure (furni-	13,200		Net ..		10,87,224
shed by the Forest ..			Chenat Nair (includes		46,035
Engineer). ..			loss in disposal of		
Forest Engineering ..	2,301		assets) Rs. 38,428.		
division (saw mills.) ..			Expenditure by the		
Beypore tope ..	2,693		Forest Utilization		
			Officer ..		
			Wynaad division ..		8,688
Refunds ..	11,26,570		South Mangalore divi-		6,116
	3,161		sion ..		
			Nilambur division ..		2,272
			Expenditure incurred		19,448
			by the Forest Engi-		
			neer pertaining to		
			Nilambur (provision-		
			ally adopted).		
12,63,326	Total ..	11,23,409	12,85,865		11,69,783

Deficit.—Rs. 46,374 against deficit of Rs. 22,539 in the previous year.

The revenue from sales transacted by the Forest Utilization Officer is given below :—

	Rs.	
Nilambur (Beypore depot.)	2,04,894	Before 1st December 1930.
	1,48,881	After 1st December 1930 when the depot was transferred to the control of Forest Utilization Officer.
	3,53,775	
Wynaad division (Mysore and Nanjangod).	96,219	Before 1st December 1930.
	46,560	} After 1st December 1930.
	68,192	
	2,10,971	
Kasaragod depot ...	52,133	(excluding sleepers).

There were practically no sale transactions in Olavakkot depot.

Total sales amounted to Rs. 6,16,899. The Forest Utilization Officer's overheads on sales (exclusive of depot expenses) were 2.36 per cent on the turnover (as given in the audit report for 1930-31).

The financial position of the divisions is dealt with below. As observed in the previous report, the Nilambur figures convey a misleading impression. On account of commercial accounts there, only the net results of exploitation activities emerge. Also adjustments refer partly to transactions of the current year and partly to those of the previous year.

Division.	Revenue.	Expenditure.	Net.
	RS.	RS.	RS.
Mangalore North	86,833	1,00,807	— 13,974
Mangalore South	2,81,421	1,36,559	+ 39,860
	+ 1,144	+ 6,116	
Wynaad	311		
	3,71,237	3,93,261	— 30,702
Nilambur	+ 25	+ 8,688	
	1,23,621	40,179	+ 64,415
The Nilgiris	+ 2,693	21,720	
	97,381		
	+ 2,020	1,35,186	— 35,785
Palghat			
Chenat Nair	2,39,979	2,20,380	+ 19,599
Forest Engineer	13,200	46,035	— 32,835
Direction	2,301		+ 2,301
	2,387		
	1,144	60,862	— 59,619*
Total	11,23,409	11,69,783	— 46,374

* Expenditure under Direction includes pay and travelling allowance of Mr. Rangaswami, Extra Assistant Conservator attached to Nilambur. Also, leave allowances adjusted to the extent of Rs. 4,497.

Pay and travelling allowance of the Inspector of Livestock and his establishment is apportioned thus:—

	RS.
North Mangalore	382
South Mangalore	656
Wynaad	2,078
Nilambur	1,504
Palghat	218
The Nilgiris	657
Fifth Circle	1,914
Second Circle	137
First Circle	164
	<u>7,709</u>

The financial position of each division is discussed below.

North Mangalore—(—Rs. 13,974).—This is due to the fact that nearly 27,000 cubic feet of timber remained unsold, that catechu coupes in Coondapoor range did not find a sale and that there was a fall of about Rs. 3,000 in realizations from unreserved lands.

South Mangalore (+Rs. 39,974).—This is an improvement on the results of past two years during which the division showed a deficit. In previous years, the mill running expenses contributed to the deficit: but this has been stopped. There was an increase in sales of timber in the log during the year. (The value of timber in Kasaragod depot at the commencement of the year was Rupees 1,05,400; but at the close of the year it was only Rs. 39,100.)

The average costs of production and the average selling rates are furnished below:—

	Average cost of production per cubic foot.	Average felling rate per cubic foot.	Quantity sold	Net result per cubic foot.
	RS. A. P.	RS. A. P.	C.F.T.	RS. A. P.
Kasaragod depot—				
Logs	0 11 3	0 12 3	5,114	+ 0 1 0
By sale of sawn materials supplied by the division including sleepers.	1 7 11	1 4 8	5,879	— 0 3 3
By sale of sawn materials supplied by the Parappa sawmill.	1 13 4	1 0 0	27,676	— 0 7 4
Mangalore depot—				
Logs (b)	0 11 2	0 14 7	15,917	+ 0 3 5
Sawn materials and scantlings, excluding sleepers (c).	1 8 9	1 9 3	4,097	+ 0 0 6
Kasaragod log depot—				
Logs (a)	0 8 6	1 3 11	8,820	+ 0 11 5
				The quantity sold was mostly teak.

	(a)	(b)	(c)
	RS. A. P.	RS. A. P.	RS. A. P.
Felling	0 0 6	0 0 6	0 0 10
Dragging	0 0 11	0 0 11	0 1 7
Rafting or carting	0 4 8	0 7 9	0 10 10
		(carting)	
Hauling logs	0 0 5		0 7 6 (sawing)
District overheads	0 2 0	0 2 0	0 4 0
	<u>0 8 6</u>	<u>0 11 2</u>	<u>1 8 9</u>

Wynaad division (—Rs. 30,702).—There is no great change as compared with last year, when the deficit was Rs. 22,372. The audit report for 1930-31 has not yet come to hand. The audit

report of the Forest Utilization Officer's division for 1930-31 gives the following figures:—

Nanjangud depot—

Logs sold...	12,516 cubic feet (average rate realized being Rs. 3-3-5 per cubic foot).
Sawn materials	18,679 cubic feet (average rate realized being Rs. 2-8-7 per cubic foot).

The Forest Utilization Officer's expenses and overheads amounted to As. 6-2 per cubic foot for logs and As. 5-6-1 for scantlings.

There was a fall in the quantity of teak logs sold, viz., 11,775 cubic feet against 42,423 cubic feet in the previous year. Demand was poor.

Sales through the Forest Utilization Officer in Mysore depot amounted to Rs. 68,192.

The closing stock in the two depots amounted to 264,000 cubic feet, the stock in the two depots being nearly equal.

Nilambur division.—According to commercial accounting the financial result, so far as adjustments were actually effected during the year, is a profit of Rs. 64,415. As will be seen below, the position, presented according to ordinary accounts shows a profit of slightly over two lakhs. The audit report has not yet come to hand in the Direction office. The information furnished by the District Forest Officer on the basis of audit report is furnished below.

The net profit for the year under review of the Exploitation unit of the division, which is a commercial concern, is Rs. 1,85,791 against Rs. 1,71,189 in 1929-30. The total revenue and expenditure of the division (commercial and non-commercial units) are given below:—

EXPLOITATION UNIT.

	Net surplus
	RS.
Balance profit of 1929-30 adjusted in the accounts of 1930-31	1,21,119
Profit for the year 1930-31	1,85,791
Total	3,06,910

REGENERATION AND GENERAL FOREST ADMINISTRATION.

Revenue.

	RS.	Net surplus.
		RS.
1. Recovered by adjustments from the commercial concern	1,04,232	
2. Revenue realized by the district	4,449	
3. Revenue realized by the Forest Utilization Officer, pertaining to non-commercial units	4,492	
Total	1,13,173	

Expenditure.

1. District expenditure (including leave salary adjusted by the Accountant-General)	95,625	
2. Expenditure incurred by the Forest Engineer	37,310	
3. Expenditure incurred by the Forest Utilization Officer	2,272	
	1,35,207	
Net	—	22,034
Total	2,84,876	

The different figures making up the net profits of the Exploitation unit for the two years 1929-30 and 1930-31 are compared below:—

	1929-30.	1930-31.
	RS.	RS.
Profit on forest trading	26,405	41,026
Do. hand-sawn sleeper trading	14,320	20,661
Do. log trading, Beypore	1,18,504	1,39,078
Do. overseas consignment trading	1,818	— 842
Do. sawn timber trading, Beypore	25,727	— 2,144
Do. sawn timber, Olavakkot	—	2,773
Interest received, etc.	818	2,219
Other receipts	2,368	2,775
Total	1,89,960	2,05,546
Deduct interest on capital and other miscellaneous charges	18,771	19,755
Net profit	1,71,189	1,85,791

The variations are explained below.

Forest trading—Increase.—The increase is mainly due to the larger quantity sold in the forest and to the higher average rate than in 1929-30, as shown below:—

	1929-30.		1930-31.	
	Quantity.	Rate.	Quantity.	Rate.
	C. FT.	RS. A. P.	C. FT.	RS. A. P.
Teak logs	1,138	1 0 1	20,875	1 1 10
Teak poles	62,271	0 8 10	67,405	0 7 1
Miscellaneous	34,104	0 4 3	31,902	0 5 5
Total	97,513	0 7 4	120,182	0 8 6

Hand-sawn sleeper trading—Increase.—Mainly due to the increase in the number of sleepers supplied to the railways as shown below:—

	1929-30	1930-31
Broad gauge—	RS.	RS.
First class	3,623	3,809
Second class	273	7
	3,896	3,816
Meter gauge—		
First class	1,038	12,845
Second class	70	43
	1,108	12,888

Log-trading—Beyppore—Increase.—This is due to the larger quantity sold. Against 158,719 cubic feet sold in 1929-30, the sales in 1930-31 amounted to 310,450 cubic feet. The increase is, however, not proportionate to the quantity sold. This disproportion is partly due to the large quantity of species other than teak sold, and partly to the low rates realized for most of the classes of timber sold. These low rates were due to general trade depression, and to the attempt to dispose of most of the stock within the financial year, on the assumption, presumably, that trade would be even worse in the current year. The average rate per cubic foot obtained during the year was only Rs. 1-0-7 per cubic foot against Rs. 1-8-8 in 1929-30.

Sawn timber trading—Beyppore.—The sawmill at Beyppore worked only for two months during the year. The mill was closed with effect from June 1930 under the orders of Government.

Due to the depression in trade there was practically no market for the sawn materials and so the rates realized were poor. The quantity sold during the year was 11,475 cubic feet against 36,604 cubic feet in 1929-30.

The selling rates and the costs of production for the two years 1929-30 and 1930-31 are compared below:—

(a) For logs.

	Cost of production at Beyppore sale depot per cubic foot including overheads.		Sale rate per cubic foot at Beyppore.		Quantities sold.	
	1929-30.	1930-31.	1929-30.	1930-31.	1929-30.	1930-31.
	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	C.F.T.	C.F.T.
<i>(a) For logs.</i>						
<i>Nilambur Range.</i>						
Teak	0 4 10-7	0 5 6-9	1 14 7	1 11 1	88,230	74,920
Miscellaneous species from natural forests	0 7 4-6	.. ..	.. ..	.. ..	.. ..	.. ..
<i>Amarampalam Range.</i>						
Teak	0 2 6-3	0 8 10-4	1 1 10	0 12 11-5	20,134	80,693
Miscellaneous species from natural forests	0 10 4-0	0 8 11-3	1 1 0	0 13 3-1	50,355	154,837
<i>Note.</i> —The cost of production has been worked out separately for each range, but the timber when it reaches Beyppore, is all sold together, and the rate realized for timber of each range is therefore not available. The teak logs came mainly from Nilambur, and the miscellaneous timber from Amarampalam range.						
<i>(b) For sawn timber.</i>						
<i>Hand-sawn sleepers—</i>						
Nilambur range	1 3 3-9	1 8 10-3	2 6 11	2 3 7	13,837	31,260
Amarampalam range	1 7 5-6	1 9 11-3	2 6 11	2 3 7	26,665	2,113
Beyppore mill-sawn timber	2 4 4-1	2 4 5-8	3 1 8	3 3 1	1,338	6,482
Do.	2 1 3-4	2 2 7-9	3 10 11	2 11 5	4,010	563
Rejections and other sales	0 2 0-7	.. ..	2 10 10	1 9 8	39	381
			0 11 6	0 4 1	4,477	1,936

(a) Sales through agent; expenditure figures include his commission.
(b) Sales to public and work orders.

Details for the costs of production are furnished below:—

(a) For logs.

	Plantation teak.		Miscellaneous species natural forest.	
	1929-30.	1930-31.	1929-30.	1930-31.
<i>Nilambur Range.</i>	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.
1. Felling, conversion, dragging, carting, etc., up to riverside depots.	0 1 2.4	0 1 1.2	0 2 4.7	0 2 1.4
2. Overheads and other miscellaneous charges.	0 1 8.4	0 1 7.4	0 1 8.4	0 1 7.4
3. Floating charges to Beypore	0 1 11.9	0 2 10.3	0 3 3.5	Miscellaneous species were not floated but sold locally.
Total cost of logs at Beypore per cubic foot.	0 4 10.7	0 5 8.9	0 7 4.6	
<i>Amarampalam Range.</i>	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.
1. Felling, conversion, dragging, carting, etc., up to riverside depots.	0 4 0.7	0 3 8.5	0 4 10.4	0 3 9.4
2. Overheads and other miscellaneous charges.	0 1 8.4	0 1 7.4	0 1 8.4	0 1 7.4
3. Floating charges to Beypore	0 3 9.2	0 3 6.5	0 3 9.2	0 3 6.5
Total cost of logs at Beypore per cubic foot.	0 9 8.3	0 8 10.4	0 10 4.0	0 8 11.3

The variations in the rates are briefly explained below:—

Item 1.—Felling, conversion, dragging, etc.—Nilambur range.—The reduction is partly due to reduced rates paid for felling and carting and partly to the lower cost of maintenance of livestock employed on dragging owing to the lower rates paid for provisions, which more than counteracted the adverse factor of being unable to work the livestock full time owing to restriction of felling.

Amarampalam range—Plantation teak.—The cost of felling and dragging was only As. 1-8-8 per cubic foot against As. 2-7-1 per cubic foot in 1929-30, due to reduction of cost of felling and maintenance of livestock and in spite of restricted exploitation as stated above. But in the case of carting, on account of longer leads, a higher rate had to be paid (As. 1-10-7 per cubic foot against As. 1-5-6 in 1929-30).

Miscellaneous species.—The decrease is mainly due to the reduction of cost of working the tractor; the cost of carting was also less due to shorter lead.

Item 2.—Overheads.—The details of overhead charges are given below:—

	1929-30.		1930-31.	
	Amount.	Rate per cubic foot.	Amount.	Rate per cubic foot.
	RS. A. P.	A. P.	RS. A. P.	A. P.
Share of range and district establishment.	28,673 4 6	0 9.96	15,616 6 9	0 7.186
Overseas and passage pay	2,940 5 2	0 1.02	1,352 0 0	0 0.621
Leave and pension contribution	5,596 5 9	0 1.94	3,117 3 0	0 1.433
Direction charges	3,000 0 0	0 1.04	3,000 0 0	0 1.378
Share of Inspector of Livestock	2,123 0 0	0 0.74	1,504 0 0	0 0.690
Interest on Exploitation Capital	6,639 0 0	0 2.31	8,150 0 0	0 3.743
Audit fee	1,500 0 0	0 0.52	1,500 0 0	0 0.689
Preliminary expenses written off (working plan).	855 12 6	0 0.30	1,711 8 11	0 0.786
Repairs to roads	1,538 0 3	0 0.53	976 0 11	0 0.448
Rent of buildings and furniture	2,048 2 5	0 0.71	2,241 6 0	0 1.029
Postage	360 7 8	0 0.13	428 5 0	0 0.196
Tools and miscellaneous articles written off.	2,526 10 3	0 0.88	1,426 9 0	0 0.655
Cost of stationery and printed forms	396 13 0	0 0.14	568 13 4	0 0.261
Miscellaneous and contingent expenditure.	577 11 9	0 0.20	546 12 2	0 0.251
Total	58,775 9 7	1 8.4	42,169 1 1	1 7.4

The proportion of the district overheads debited to the Exploitation unit was reduced from 50 per cent to 25 per cent in accordance with G.O. Mis. No. 1536, Development, dated 12th August 1930, which accounts for the decrease.

As the quantity of timber felled during the year was less (only 418,016 cubic feet felled in 1930-31 against 552,469 cubic feet in 1929-30) the reduction is not more appreciable.

Item 3.—Floating charges to Beypore—Nilambur range.—The actual rates were higher than in 1929-30. The increase is due to the fact that the localities from which floating took place were considerably less accessible and the floating streams more difficult than in 1929-30. Further, in the year under report, Government elephants were not used to drag logs to the top of the bank, for delivery to the contractor, as was the case in former years, so he had to be paid extra for using his own elephants. Actually, the increase is not in proportion to the increased difficulty of work, and it is considered that Government got better value for the rates paid in 1930-31 than in the previous year when rates were lower and conditions much easier.

Amarampalam range.—The total quantity floated during the year from this range was 226,041 cubic feet (which is a record figure) against 155,485 cubic feet in 1929-30. 120,928 cubic feet

were floated with boats, and the balance in bamboo rafts. The rates for floating by boats were considerably reduced (from Rs. 3-10-0 per candy and the lowest rate paid in 1929-30 to Rs. 3-6-0 and Rs. 3-2-0 per candy from Nellicutha and Nedungayam respectively). This is the main reason for the decrease in the average rate, though the reduced cost of feed of livestock was a contributory factor.

(b) For sawn timber.

Hand-sawn Sleepers.

	Nilambur range.		Amarampalam range.	
	1929-30.	1930-31.	1929-30.	1930-31.
	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.
1. Cost of timber to yield 1 cubic foot of sleeper.	0 9 0.8	0 9 8	0 12 2.6	0 8 7.7
2. Share of elephants engaged	0 1 0.4	0 1 11.8	0 0 8.4	0 1 9.6
3. Sawing and transport charges	0 6 5.1	0 11 9.8	0 7 9.0	0 13 11.6
4. Contingent and miscellaneous expenses.	0 1 4.7	0 0 6.6	0 1 4.7	0 0 8.3
5. Forest Utilization Officer's overheads.	0 1 4.9	0 0 10.1	0 1 4.9	0 0 10.1
Total ..	1 3 3.9	1 8 10.3	1 7 5.6	1 9 11.3

The increase in costs was mainly due to the increased rates for sawing and carting on account of the remoteness of the localities from which sleepers were worked. The increase in share of elephants is due to the scattered disposition of logs suitable for sawing, which necessitated longer dragging to the sawing centres. (Logs cannot be hoisted singly, in the flat country in which most of the sleeper operations were conducted, without paying extremely high rates for digging saw-pits.)

Beypore Saw Mill.

	1929-30	1930-31
	C.F.T.	C.F.T.
Quantity of logs converted	85,865	4,861
Yield	48,677	3,283
Percentage of outturn	56.7	67.5

	1929-30.			1930-31.		
	RS.	A.	P.	RS.	A.	P.
Cost of timber to yield 1 cubic foot of sawn material.	1	0	3.6	0	13	9
Cost of sawing per cubic foot...	0	11	9.6	1	1	11.8
Expenses in connection with sale—						
Binding and transport	0	1	8.7	0	1	2.4
Share of depot expenses	0	1	7.8	0	0	10.7
Share of overheads	0	1	9.7	0	0	10
Total cost per cubic foot for sales other than to agent.	2	1	3.4	2	2	7.9
Add commission paid on sales to agent.	0	3	0.7	0	1	9.9
Total cost per cubic foot for sales to agent.	2	4	4.1	2	4	5.8

The saw mill at Beypore worked only for two months during the year as Government ordered the mill to be closed.

The profit for the year has not been adjusted at all. As there was sufficient working capital, the advance of Rs. 70,000 made by Government to the concern has been refunded to Government.

The figures of gross revenue and expenditure pertaining to the division as analysed by the District Forest Officer in ordinary accounts form are as follows:—

	Revenue.	Expenditure.
	RS.	RS.
Exploitation	5,03,953	1,67,692
Other credits and debits that cannot be classified	3,386	1,35,274
	5,07,339	3,02,968

The Nilgiris (—Rs. 35,785).—This division works usually with a deficit; but it showed a surplus last year. This year it has again shown a deficit. There has been a fall of about Rs. 25,000 in timber revenue, Rs. 14,000 under sandalwood, Rs. 10,000 under firewood and charcoal, and Rs. 18,000 under Revenue department timber; and simply poor demand accounts for the deficit.

Palghat (+Rs. 19,599).—Position is about the same as in the last year. There has been an increase in revenue as well as of expenditure. The increase of expenditure was due to inclusion of the sleeper operation in the Kalladikode Valley, an operation which belonged hitherto to the Exploitation division.

Chenat Nair and Direction figures do not call for remarks.

The important variations between 1929-30 and 1930-31 are explained below. Last year, the revenue realized by the Forest Utilization Officer was credited in his accounts, but this year it has been transferred to divisions concerned.

REVENUE.

40. VIII (a) *Timber and other produce removed by Government Agency—Sandalwood* (— Rs. 17,025).—This was due to fall in price.

Timber (+ Rs. 47,862).—There was an increase of Rs. 47,000 in Palghat and of Rs. 27,000 in Wynaad and a decrease of Rupees 26,000 in the Nilgiris. The increase in Palghat was due to the inclusion in the divisional accounts of the Kalladikode sleeper supply; and was due also to the adjustment of Rs. 24,000—sleeper revenue—pertaining to the 1930-31 supply, within the year itself. The increase in Wynaad was due to sales of larger quantities; more timber having been put on the market. The decrease in the Nilgiris was due to decreased demand for the type of timber that this division produces.

Firewood and charcoal (— Rs. 11,548).—Due to poor sales in the Nilgiris.

Timber and other produce removed by consumers—Forest Department—Other minor forest produce (— Rs. 8,433) *exclusive of revenue from Beypore coconut tope*.—This deficit was spread over the North and South Mangalore and Wynaad divisions. There was a fall in price of minor forest produce and certain minor forest produce 'farms' could not be sold.

Revenue Department—Timber (— Rs. 21,670).—This was mainly in the Nilgiris where in the previous year over Rs. 18,000 was realized in a single case of assignment.

Rent of buildings (— Rs. 5,306).—The decrease is mainly in Nilambur and is apparently due to the fact that no rental is now charged on regeneration areas, as regeneration expenditure is no longer capitalized.

EXPENDITURE.

41. 8 (b) *Conservancy, Maintenance and Regeneration—Timber—(Government Agency)*.—The expenditure in division shows an increase of Rs. 1,25,142. The increase was mainly in Wynaad and Palghat divisions. This was on account of larger output in the former and of inclusion of Chenat Nair operations in the latter.

Regeneration (+ Rs. 25,327).—The increase is due to the fact that regeneration expenditure in Nilambur is now to be treated as 'ordinary.' It was charged to capital outlay in the previous year.

8. c. i. *District Establishments*.—The expenditure in Nilambur which was treated as capital in the previous year is transferred to ordinary during the year. The expenditure inclusive of Nilambur shows an increase of Rs. 7,789 and is due to the fact that in Nilambur the proportion of district overheads debitable to regeneration and general forest administration has been changed from 50 to 75 per cent.

52. A. *Capital Outlay—Communications and Buildings* (—Rs. 11,901).—The decrease is spread over several divisions and is due to works being reduced on account of financial stringency.

Investments in Government commercial undertakings.—The expenditure in 1929-30 was Rs. 27,503; and in 1930-31 Rupees 72,195. The working capital of Rs. 70,000 was withdrawn during the year.

The expenditure on roads from Nedungayam to Karulai in 1930-31 was also less by about Rs. 9,000.

The outstandings at the close of the year amount to Rs. 2,88,811 of which Rs. 35,990 fell within the year.

Of the revenue realized, 87 per cent was from major produce, 7 per cent from minor produce and 6 per cent from other sources. Of the expenditure, 71 per cent relates to exploitation, 14 per cent to improvement and upkeep of forests and 15 per cent to miscellaneous items.

CHAPTER VI.—RESEARCH AND EXPERIMENTS.

42. As in previous years the principal silvicultural research work was conducted by the Forest Research Officer.

Some minor experiments were carried out by the District Forest Officers with the following result :—

North Mangalore.—'Funnel' sowings in Coupe V of Someshwar reserved forest were carried out during the year. The treatment need not be detailed as it followed the usual lines. The results lead the District Forest Officer to think that Someshwar semi-evergreen tracts do not suit teak. The latter tended to fork at a low height, and only 50 per cent of the plants survived their first hot weather. Xylia and rosewood were more satisfactory in the District Forest Officer's opinion. However, further time is needed before it can be said what has succeeded and what has failed.

Burning of deciduous forest which has a tendency to become evergreen.—Under instructions in an inspection note by Mr. A. Wimbush, the then Conservator of Forests, two 10-acre plots

were selected in Coupes IV and V of Doddinamane reserved forest and were demarcated by cut lines 10 feet wide. Both the plots are adjacent, and are typical areas containing *Strobilanthes*, evergreen shrubs and climbers with sparse regeneration of the more common deciduous species. The area in Coupe IV was set fire in January when all the debris of fallen trees were quite dry. Owing to the presence of *Strobilanthes* standing still green, the burning was not very successful.

Strobilanthes and other undergrowth of Plot 2 in Coupe V was clear-felled in February and was allowed to dry. When the cut stuff was quite dry in March, the area was set fire and a fierce fire was the result.

It is considered by the District Forest Officer that fire will prove efficacious in checking the growth of inferior evergreen species; and that the growth of ventteak (*Lagerstrœmia*), *Terminalias* and *Xylia* root suckers will be assisted. The need now is to achieve a cheap method.

Preparation of catechu balls and cakes departmentally.—In order to gain first-hand knowledge, cutch was prepared departmentally. Ten average-sized *Acacia Sundra* trees were felled and they produced 17 quarters and 21 lb. of cutch. Of this, 10 quarters and 14 lb. were in the shape of balls, and 7 quarters and 7 lb. in the shape of cakes.

The wood of the ten trees employed amounted to 90 cubic feet; and contained 40 cubic feet of heartwood, weighing 161 quarters and 19 lb. Cost of felling, billeting, carting the billets to the stills and preparing balls and cakes: Rs. 60.

Two hundred pounds of cutch half in the form of cake and half in balls was sent to the Imperial Institute, London, and to the Forest Research Institute, Dehra Dun, for valuation and advice as to marketing.

Samples of cutch were also sent to about 50 dealers in cutch all over India and Burma. The District Forest Officer has been receiving enquiries.

South Mangalore.—The experiment started in previous years of clear-felling all undergrowth except *Hopea* in Jalsur East reserved forest (artificial area) over about 10 acres was given up as it was found that the *Hopea* seedlings did not respond to this sort of treatment.

In accordance with suggestions by the Forest Research Officer, to the effect that the present stocking of rosewood (*Dalbergia latifolia*) could be improved by encouraging root-suckers, this has been done by cutting a trench 15 to 20 feet away from and around each tree before it was felled. The results will be apparent in 1931.

Wynaad.—A lantana area of 40 acres in Begur, set aside for experimental burning, was burnt for the fourth time since the experiment was started. Although it can be said that the yearly burning checks the growth of lantana, and makes it less vigorous, the burning had also affected the tree-growth adversely. As continued burning would end by divesting the area of tree-growth the experiment has been abandoned.

The 600 seedlings of Ceylon satinwood planted in half an acre near Muthanga referred to in the last report were left unweeded, to see if this species derives benefit from not being weeded. Out of 600 original seedlings, only 120 exist; and seedlings suppressed by weeds are very adversely affected.

Nilambur.—A Burmese bamboo (*Cephalostachyum pergracile*) was sown in June 1929 in a half-acre plot in the 1902 teak plantation in Amarampalam range. The object was to produce an under-wood beneath the teak. The bamboo, which is evergreen and thornless and of very useful type, is doing extremely well. In some patches the culms are 6 feet high; and all are well stocked and healthy. The experiment is the outcome of advice received from Burma delegates at the 1929 Sylvicultural Conference at Dehra Dun. The subject of growing teak with admixture species capable of improving and protecting the soil was under discussion.

Palghat.—In the case of two species, *Albizzia odoratissima* and *Melia indica* experiment was made to ascertain whether complete 'stumping' (as done in the case of teak) or partial lopping of the top and root, or entire transplanting gave the best results.

Planting was done between 11th and 13th of July 1930. The following table gives the result:—

Species.	Seedlings transplanted.	Top and root lopped and planted.	Stumps planted for comparison.
	NUMBER.	NUMBER.	NUMBER.
<i>Albizzia odoratissima</i> ...	56	60	46
<i>Melia indica</i> ...	67	76	50
<i>Survivals on 9th December 1930.</i>			
<i>Albizzia odoratissima</i> ...	47	37	41
<i>Melia indica</i> ...	48	36	32

CHAPTER VII.—ADMINISTRATION.

43. Mr. A. Wimbush held charge of the Circle throughout the year.

Tours.—The Chief Conservator of Forests inspected certain localities in Wynaad, Palghat and the Nilgiri divisions.

The Conservator of Forests spent 184 days in camp touring in all the divisions and inspection notes were written on the forests of North Mangalore, South Mangalore, Nilambur and Palghat divisions. All the District Forest Officers spent more than the prescribed minimum period in camp.

Inspection of District Forest and Range offices and sale depots.—The Conservator inspected all the District Forest offices and the District Forest Officers all Range offices in their divisions. All sale depots except Kasaragod depot and Nilambur Road Railway Station depot were inspected by District Forest Officers concerned.

District Forest Officer's accounts inspection.—The Accountant-General's staff inspected during the year the accounts of North Mangalore, South Mangalore and the Nilgiris. The accounts of Palghat division were inspected after the close of the year in May 1931. The accounts of Wynaad and Nilambur were audited by the staff of the Assistant Director of Commercial Audit.

Vernacular Training School.—The seventh session of the Vernacular Training School took place in the Palghat division between 1st May and 31st October 1930. Ranger T. G. Sankaran Nayar was Senior Instructor and Ranger S. Ramalinga Ayyar was Junior Instructor. Thirty out of thirty-one students finished the course. One student from Wynaad division returned to his division on account of illness. The thirty trained students included two foresters and twenty-eight guards. Only one student was awarded a first-class certificate, but all the remainder secured second class. The health of students was reported to have been poor.

Health of establishment and sanitation.—The health of establishment was reported to have been bad in all divisions except North Mangalore and the Nilgiris.

Sanitation.—Injunctions for the clearing of undergrowth for 100 yards round departmental buildings were obeyed in order to improve health condition.

Casualties—Wynaad.—Two forest guards died of malaria.

CHAPTER VIII.—GENERAL.

(1) FORMATION AND MANAGEMENT OF PANCHAYATS.

(To include Forest Village System.)

44. North and South Mangalore divisions are the only divisions in which there are panchayats.

In the North Mangalore division, the management by panchayats of three reserves, viz., Tenkahola, Iodar and Hosabetta, was continued, satisfactorily. The only panchayat in South Mangalore division, viz., Porkala, was closed during the year. This was on account of bad work and apathy on the part of the people. An immensity of trouble was taken by the forest officers of the two Mangalore divisions and by their staff, with the object of promoting panchayat management of reserves. This bore no fruit whatever. The impression generally seems to have been that the civil disobedience movement would end in the transfer of the reserves unconditionally to the people, and that participation in panchayats was therefore not worth considering. There were however village groups that were prepared to assume panchayat management on all our terms except that payments to Government even on the most modest scale could not be agreed to.

(2) MEASURES FOR IMPROVING LOCAL SUPPLIES AND FACILITIES.

45. The special concessions granted to the ryots of South Kanara were continued. The nature of the concessions is somewhat as follows:—

(1) Permission to clear undergrowth in all reserves (except those near to the coast) to a distance of half a mile from the limits of private holdings and to utilize the materials so cut for their own domestic and agricultural purposes subject to the condition that burning of the cut materials is not allowed in the reserved forest and provided also that the Forest Department may claim for departmental disposal any timber tree that may be cut.

(2) Clearing of undergrowth in the reserves near the coast to a distance of 200 yards from the limits of private holding.

(3) Clearing of undergrowth in all areas sown with Hopea.

(4) Free removal of green-manure leaves of unclassified species and dry leaves of all species and dead fuel.

(5) Permission to clear growth on footpaths and cart-tracks admitted as rights of way to a width of half a chain in the case of footpaths and one chain in the case of roads.

The North Mangalore District Forest Officer reports that the concessions are abused in reserves where there exists demand for manure leaves. The 'system' is incompatible with our protective system, which places one forest guard, who is generally a local man of humble origin, in charge of thousands of acres of forest. "The difficulties of enforcing observance of any rules are insuperable, if the whole forest is to be inundated with villagers at any hours of the day or night." If the views of local officers are to be believed therefore, this concession arrangement is imperfect in operation.

The annual report on these concessions was submitted to the Chief Conservator of Forests in this office D. Dis. No. 409/31, dated 14th March 1931, and a further report in January 1932 has been called for in his No. 2537/C.1/31-1, dated 25th March 1931.

In South Mangalore, the concessions granted do not seem to have been availed of to any great extent.

In North and South Mangalore divisions, the maximum rates, which may be charged by the departmental coupe contractors for sale of forest produce to the public for domestic and agricultural purposes, were published in the District Gazette. As in previous years, logs and scantlings of different sizes were sold in retail at fixed rates at the sale depots in these two divisions.

Wynaad.—The local demand for forest produce is in general met from the extensive private forests and unreserved lands.

Nilambur.—Timber is extracted departmentally and is sold principally on the coast. There is sufficient produce for the domestic needs of the people from the extensive private forests.

No special steps needed for improving water-supply in grazing grounds. Rainfall in the Circle is copious. There were numerous cases in which ryots were given on payment of a nominal fee licences for use of water from jungle streams.

Under G.O. Ms. No. 295, Revenue, dated 7th February 1931, the licence-fee levied for water diversion in reserved forest has now to be credited to 'Revenue Department' and not to 'Forests' as hitherto.

(3) TIMBER AND SANDALWOOD TRANSIT RULES.

46. *Timber Transit Rules.*—These continue in force in all the divisions except the Nilgiris, and worked satisfactorily. The sanction of revised transit rules for Palghat division is under correspondence.

Sandalwood Transit Rules.—These are in force only in North and South Mangalore divisions and are reported to have worked satisfactorily.

(4) JUNGLE TRIBES.

47. *North Mangalore.*—The 'Kudubies' who live chiefly in the interior parts of Coondapoor taluk provided labour for fire-protection and manufacture of cutch as in previous years.

South Mangalore.—The Marattis and Malebudris still continue to practise shifting cultivation (kumris) in the unreserves of Kasaragod taluk but their activities in this respect are reported to be decreasing.

Wynaad.—The policy was continued of assigning forest lands to Kurumbars free of assessment with a view to getting them to settle down. The cess on these lands is paid departmentally. The Kurumbars were also allowed free grazing. No advances for purchase of cattle for cultivation were given during the year.

The Nilgiris.—The Kurumbars in the Mudumalai range continue to be employed as elephantmen. They also co-operate with us in tuckle cultivation. Kurumbars and Chetti ryots who live within the forests have been given lands free, or on nominal fee, on condition that they supply labour to the department. In Sigur range, the Kasubas were as usual encouraged to settle in Anaikatti by grant of lands for cultivation. In Coonoor range, the Irulars and Kurumbars were employed in the extraction of sandalwood and in clearing the district boundary; and were also given land free or at nominal rent.

Palghat.—There are seventeen settlements, Irulars and Kurumbars mostly, in Bolampatti and Mannarghat ranges. These people are of service as labour for forest works, and are given lands free of assessment.

In the Bolampatti range, ponam cultivation was done with the help of Irulars of Bolampatti valley.

(5) MINING AND QUARRYING.

48. Nil.

(6) LIVESTOCK.

49. *Elephants.*—We had 90 elephants at the beginning of the year. During the year, 13 were captured, and 4 calves were dropped, bringing the total to 107. Two calves died, one calf escaped, and one grown male was destroyed on account of blindness. Eight elephants were sold for Rs. 5,330. Two elephants were sent to a Zoo in Australia. Thus the number at the end of the year was 93.

Other animals.—There were 32 buffaloes, 4 bulls and 5 asses. Six buffaloes were sold. The balance at the end of the year was 26 buffaloes, 4 bulls and 5 asses.

(7) VETERINARY ESTABLISHMENT.

50. As in previous years, there were two Assistant Veterinary Inspectors, one for Nilambur and the other for Wynaad and the Nilgiris. The Inspector of Livestock supervised the work of these two assistants and in addition, attended to livestock of South Kanara and Palghat.

The work of Veterinary officers attached to the Forest Department was assiduous. No doubt exists that the care taken of departmental animals is ever improving.

(8) CIVIL SUITS.

51. *South Mangalore*.—A suit was brought against Government by V. Krishnayya, lessee of cardamom estate, Kōmbar reserved forest, for recovery of land-cess collected by the Revenue Department alleging that under the terms of the lease-deed executed by him and this department, he is not liable to pay the land-cess on the cardamom area. The suit was dismissed with costs by the District Munsif, Pattur.

Nilambur.—The decree obtained against the Uralan of Trikkalayur devaswam referred to in the last report was executed during the year. The Uralan has deposited Rs. 3,739-10-9 towards the decree amount. The Collector is reported to be taking action to dispose of the matter.

The appeal preferred by Naduvath Subrahmanyan Nambudiripad in the District Court referred to in the last report, was dismissed with costs to Government. The matter is in the hands of the Collector.

The suit filed by Mr. Rajeswaran, sawing contractor in Beypore depot, referred to in the last report was not heard during the year.

The suit filed in the District Munsif's Court, Calicut, against A. P. Kunhiperachan, ex-lessee of Beypore coconut tope, and referred to in the previous report was decreed in favour of Government. The Collector is taking execution proceedings to recover the amount.

ANNEXURE.

NORTH MANGALORE DIVISION.

Description.—The forest division consists of the northern portion of the South Kanara district. The important timber forests are situated on the western slopes and the Terai of the Western Ghats up to the Mysore Frontier. On the ghaut slopes 'Kumri' cultivation and the permit system of the past have been responsible for the disappearance of most of the marketable timber. The heaviest stand of timber is now found along the ghauts between 1,500 and 2,000 feet above mean sea level. The forests on the ghaut slopes are both evergreen and deciduous and some of the trees, notably Poonspar (*Calophyllum elatum*) and Kiralbhogi (*Hopca parviflora*) attain an immense size. As we approach the coast the quality of the forest deteriorates as the population and cultivation increase. The outlying hills near the coast are fuel

rests. *Acacia Sundra* is a special feature of some of the forests near the coast. It is confined to the laterite hilly plateau between the sea and the ghauts in Coondapoor taluk.

2. *Area of reserved forests and lands*.—The total area of the reserved forests at the close of the year was 359 square miles.

Reserved lands.—Nil.

3. *How the forest district is split up into subordinate administrative charges*—

Name of range.	Number of beats.
1. Coondapoor	18
2. Shankaranarayana	10
3. Udipi	14
4. Mangalore	8
Total ...	50

To help the four Rangers in the execution of work and for protection of reserves there is a staff of 15 foresters and 68 guards and watchers.

4. *Cost of administration*—

	rs.
District Forest Officer	10,876
Forest Rangers	11,542
Subordinate staff	22,446
Clerical and menial staff	9,455
Miscellaneous including contingencies	2,529
Total ...	56,848

5. *Cost under other important heads*—

	rs.
Timber operations	25,771
Firewood	...
Sandalwood	1,000
Feed and keep of livestock	5,075
Regeneration	2,300
Protection from fire	2,108
New works—Buildings	567
Do. Wells	839
Other miscellaneous items	6,299
Total ...	43,959

6. Income from main sources—

From reserves.						RS.
Timber	...	...	...	...	...	37,096
Firewood	...	...	...	...	...	13,226
Grazing	...	...	...	...	...	5,294
Other minor produce	...	...	...	...	...	4,156
Miscellaneous revenue	...	...	...	...	...	8,813
Deduct—Refunds	...	...	...	...	...	84
Total						68,501
From unreserves.						
Timber	...	...	...	...	...	5,182
Firewood	...	...	...	...	...	8,028
Sandalwood	...	...	...	...	...	6,000
Bamboos	...	...	...	...	...	2
Other minor produce	...	...	...	...	...	1,120
Total						18,332

7. Chief works done in the division—

- (1) Exploitation of timber in three centres amounting to 48,210 cubic feet to supply sleepers to the railways and timber to the coast market.
- (2) Extraction and marking of 6½ tons of sandalwood.
- (3) The Inspection bungalow at Kervashe was completed.
- (4) (i) Artificial regeneration of 65 acres with Hopea and 4-40 acres with teak, etc.
(ii) Preparation of 91 acres for artificial regeneration of Hopea and 4 acres for teak, etc., sowings.
(iii) Tending of 2,885-08 acres of artificially regenerated areas.
- (5) Fire-protection operations, the area under special protection being 72,219-60 acres.

SOUTH MANGALORE DIVISION.

Description.—The division extends from near Kudremukh Hill (the highest point in the Western Ghats of South Kanara) on the north, to Malabar on the south, the Arabian Sea on the west and up to Coorg and Mysore on the east. It covers the slopes of the Western Ghats and their foot-hills and is drained by the Netravati, Kumardhari, Chandragiri and Nileshwar rivers. The highest peak, Kudremukh, is 6,200 feet above sea level.

The lower slopes of the ghats and the foot-hills are clothed with dense evergreen and semi-evergreen forests containing magnificent trees, but the majority of them are of unsaleable species, the principal useful species, being Hopea, Poonspar, *Terminalia tomentosa*, *Terminalia paniculata*, Xylia and also some scattered white cedar and wild jack. Trees up to 150 feet in height and 15 feet in girth are not uncommon. Ebony, red cedar and *Acrocarpus* also occur to a very limited extent in some localities. Five varieties of canes are found in evergreen belts and of these the Naga (Cobra) cane is the most sought after. Bamboos and reeds occur in plenty. There are three cardamom estates on the steep upper slopes of the ghats.

Next to the semi-evergreen is the deciduous zone which yields fairly large quantities of timber and fuel. The principal species of these forests are teak, Xylia, *Terminalias*, rosewood, benteak (*Lagerstræmia*), *Pterocarpus marsupium* and *Albizzias*. A small quantity of sandalwood is found, but practically the whole of it occurs in unreserves and in kumaki lands.

The rainfall is very copious and in Nalkur at the foot of the ghats 212 inches were recorded in the year 1930.

2. *Area of reserved forests and lands.*—Four hundred and forty-seven square miles.

3. *How the forest district is divided into subordinate administrative charges.*—

Name of range.	Number of beats.
1. Puttur	14
2. Kasaragod	14
3. Uppinangadi	9
4. Beltangadi	6
Total	43

To help the four Rangers in the execution of work and for protection of reserves, there is a staff of 14 foresters, 59 guards and watchers.

4. *Cost of administration.*—

	RS.
District Forest Officer and Assistant Conservators.	17,678
Rangers	8,100
Subordinate and protective staff	20,638
Clerical and menial staff	9,834
Miscellaneous including contingencies	3,497
Total	59,747

5. Cost under other important heads—

	RS.
Extraction of timber	51,127
Feed and keep of livestock	11,221
Regeneration	3,378
Protection from fire	1,914
Roads—New works	901
Buildings—New works	1,815
Other miscellaneous items	6,456
Total ...	76,812

6. Income from main sources—

From reserves.

	RS.
Timber	1,40,242
Firewood	2,587
Bamboos	381
Grazing	10,114
Minor produce	2,573
Other miscellaneous items	10,529
	1,66,426
Deduct—Refunds	975
Total ...	1,65,451

From unreserves.

	RS.
Sandalwood	3,500
Timber	8,619
Firewood	2,149
Other minor produce	1,666
Bamboos	36
Total ...	15,970

7. Chief works done in the division.—The principal activities of the division during the year were the extraction of 66,000 cubic feet of timber (for supply to railway as railway sleepers and for the coast market). Conversion and transport of timber felled in previous years, at a total cost of about Rs. 50,000. Upkeep of Hopea regeneration areas about 5,600 acres; and formation of new plantation over about 344 acres. About 3½ tons of sandalwood were extracted. The Working Plans Officer was engaged throughout the year in preparing a working plan for the division. A distance of 29 miles of the frontier political boundary was inspected this year.

WYNAAD DIVISION.

Description.—The Wynaad Forest division covers the northern strip of Malabar from the Nilgiris district on the east to Tellicherry on the west and borders Coorg and Mysore on the north. On the Western Ghats, their slopes (both east and west) and foot-hills, is good evergreen tropical jungle. On the coastal plain immediately west of the ghats is semi-evergreen and deciduous forest of fair quality. On the Wynaad plateau, east of the ghats, is good deciduous forest, gradually deteriorating towards the east to the borders of the Nilgiris, where the forest is rather stunted with large expanses of tall and dense elephant grass. The rainfall varies from 67·05 inches at Boothakkal to 183·80 inches at Kannothe.

The elevation of the plateau is a little under 3,000 feet on the average. It is hilly with occasional hills rising to over 5,000 feet. The forests of the ghats and Wynaad plateau are very malarial.

2. Area of reserved forests and lands.—Two hundred and sixty-three square miles, most of which is on the plateau.

3. How the forest district is divided into subordinate administrative charges—

Name of range.	Number of beats.
1. Kannothe	5
2. Begur	8
3. Chedleth	...
4. Sultan's Battery	...
Total ...	13

Although there are only four ranges, yet on account of extensive timber and regeneration operations and to make allowance for frequent illness, an additional staff of Rangers has to be retained. These Rangers are helped by a staff of 19 foresters and 60 guards and watchers. Chedleth and Sultan's Battery ranges are not divided into beats for protective purposes as owing to their remote situation, little protection is required. The staff of guards is however fully employed in the execution and supervision of numerous important forest works such as timber extraction, regeneration and tending.

4. Cost of administration—

	RS.
District Forest Officer and his assistant	29,122
Rangers and Assistant Veterinary Inspector	8,527
Subordinate protective staff	54,874
Clerical and menial staff	12,397
Miscellaneous including contingencies	3,692
Total ...	1,08,612

5. Cost under other important heads—

	RS.
Extraction of timber	1,97,119
Feed and keep of livestock	34,436
Regeneration	16,912
Protection from fire	1,555
Purchase of livestock	3,398
Buildings—New works	734
Roads—New works	735
Other miscellaneous items	29,750
Total ...	2,84,639

6. Income from main sources—

From reserves.		
Timber	...	3,45,071
Bamboos	...	929
Grazing	...	3,898
Other minor forest produce	...	5,253
Other miscellaneous items	...	11,054
		3,66,205
		446
Deduct—Refunds	...	
Total ...		3,65,759

From unreserves.		
Timber	...	3,744
Firewood	...	709
Other minor produce	...	1,024
Total ...		5,477

7. Chief works done in the division.—The chief works were:—

Exploitation.—Three hundred and eighty-eight thousand six hundred and sixty-seven cubic feet of timber felled and converted and partly transported to Mysore and Nanjangod depots for sale, some sold in forests, and some converted into sleepers for supply to railways.

Regeneration.—Billeting and burning of tree-debris, preliminary to planting, was carried out over 135 acres. Planting was done on 178 acres. One thousand three hundred and seventy-four acres of plantations were tended.

Elephant-capturing operations.—These were conducted at a cost of Rs. 2,083. Three elephants valued at Rs. 4,000 were captured.

NILAMBUR DIVISION.

Description.—The Nilambur Forest division lies in the watershed of three rivers, the Chaliyarpuzha, the Karumpuzha and the Punnapuzha, and their tributaries. The three join near Nilambur, and the main river thus formed is known as the Chaliyar. It forms the principal means of export for the Nilambur timber, most of which is floated down to Beypore on the coast for sale. The bulk of the area of the division is in a compact block, situated on the outer slopes and foot-hills of the Kundah range of the Nilgiris, from 8,200 feet down to 120 feet elevation. The remainder consists of scattered blocks in the plains (mostly held by Government on lease) and it is these blocks which contain most of the famous Nilambur teak plantations. These plantations cover an area of about 10 square miles and are all situated close to the main rivers.

The natural forests are of the mixed semi-deciduous type up to an elevation of about 2,500 feet. Between 2,500 and 5,000 feet the forests are mostly evergreen. Above 5,000 feet tree growth is scattered and stunted, and most of the vegetation consists of grass only. Of the natural forests, the semi-deciduous type is the more valuable both from the point of view of superiority of species in the timber market and by reason of accessibility for extraction. The finest growth in this type of forest is in the foot-hills and up to about 2,000 feet on the slopes. Only the lower portions of the semi-deciduous forests are being worked at present, though a project for extending exploitation to higher elevations is under consideration.

2. *Area of reserved forests and lands.*—One hundred and twenty-six square miles.

3. *How the forest district is split up into subordinate administrative charges—*

Name of range.	Number of beats.
1. Nilambur	4
2. Amarampalam	1
Total ...	5

There is no regular subdivision into protective units, practically all the subordinates being employed in supervising the very extensive exploitation and regeneration works, hence the apparently small number of beats.

To help the two territorial Rangers in extensive timber and regeneration operations, there are always two or three assistants or special duty Rangers. In addition, there are 20 foresters and watchers.

4. *Cost of administration—*

	RS.
District Forest Officer and his assistant	18,367
Rangers and Assistant Veterinary Inspector	11,467
Subordinate protective staff	17,171
Clerical and menial staff	10,879
Miscellaneous including contingencies	1,397
Total ...	59,281

5. *Cost under other important heads—*

Timber operations	1,31,818
Bamboos	10,618
Feed and keep of livestock	30,770
Regeneration	24,382
Fire-protection	3,772
Buildings	14,938
Roads	40,839
Other miscellaneous items	8,921
Total ...	2,66,058

6. *Income from main sources—*

Timber	4,92,837
Bamboos	7,492
Minor forest produce	5,363
Sale of elephants and cattle	3,350
Total ...	5,09,042

7. *Chief works done in the division.*—The main works are large scale timber and regeneration operations, which are summarized as follows:—

	C. FT.
Final clearfelling and extraction in mature teak plantations	68,300
Final clearfelling and extraction in natural forests.	143,500
Subsidiary (selection) fellings and extraction in natural forests	49,100
Handsawing of sleepers—3,817 Broad Gauge and 12,885 Metre Gauge sleepers were supplied to railways.	
Thinning in teak plantations 689 acres yielding	119,600
Regeneration with teak on old plantation clearings	48
Regeneration with teak on natural forest clearings	150
Regeneration with miscellaneous species	79
Tending of young plantations	376

In the year two elephants were captured. Another important activity was fire-protection of the valuable plantations and of the natural forests.

THE NILGIRIS DIVISION.

Description.—The forest division extends over the whole of the Nilgiris district. In the south-west, stretching from the lofty crests overlooking Malabar to Ootacamund town lie the grass covered downs (the Kundahs). The centre south and south-east of the plateau, which once might have been evergreen forests, is now occupied mainly by Badaga cultivation and flourishing tea estates. The north and north-east of the district is mainly reserved forests which are of great climatic use in protecting the outer slopes, but scarcely of any economic value except for some sandalwood in the lower dry belts. The Mudumalai forests occupying the north-west corner of the district, and with an average elevation of about 3,000 feet contain valuable species such as rosewood, teak and the terminalias, but the quality of the timber is much degraded from over-exploitation at the end of the last century and by constant fires. The Mudumalai reserve came into the possession of the Forest Department by purchase from the Tirumalpad of Nilambur, only in the year 1919.

2. *Area of reserved forests and lands.*—Four hundred and ninety-one square miles.

3. *How the forest district is split up into subordinate administrative charges—*

Name of range.	Number of beats.
1. Ootacamund	17
2. Coonoor	22
3. Segur	7
4. Mudumalai	9
Total ...	55

The four rangers were assisted by a staff of 12 foresters and 67 guards and watchers.

4. *Cost of administration—*

	RS.
District Forest Officer and his assistant	14,572
Rangers	15,969
Subordinate protective staff	24,643
Clerical and menial staff	12,586
Miscellaneous including contingencies	4,348
Total ...	72,118

5. *Cost under other important heads—*

	RS.
Timber	9,379
Firewood	18,007
Sandalwood	2,298
Feed and keep of livestock	7,028
Elephant-capturing operations	2,249
Regeneration	4,283
Fire-protection	2,919
Buildings—New works	596
Other miscellaneous items	11,477
Nilgiri Game Association	4,833
Total ...	63,069

6. *Income from main sources—**From reserves.*

Timber	17,228
Firewood and charcoal	35,114
Sandalwood	12,195
Bamboos	1,701
Grazing	5,742
Minor produce	3,696
Other sources including shooting licence-fees	22,042

Total ... 98,285

Deduct—Refunds 904

Net Total ... 97,381

From unreserves.

Timber	212
Firewood	298
Bamboos	...
Minor produce	57

Total ... 567

7. *Chief works done in the division.*—Timber and elephant-capturing operations in Mudumalai range, departmental fuel operations and planting in Ootacamund and Coonoor ranges and extraction of sandalwood in Sigur and Coonoor ranges.

PALGHAT DIVISION.

Description.—The forest division covers the portion of the Western Ghats to the south of North Coimbatore, the Nilgiris and Nilambur Forest divisions and north of Palghat Gap. Important deciduous

forests of Bolampatti valley and Walayar and evergreen forests of Chenat Nair, Attapadi and Silent valleys are the chief reserves included in this division. Various types of forests ranging from dry scrub jungle of Thadagam valley with less than 20 inches of rainfall to the virgin evergreen forests of the Silent valley receiving over 200 inches of rainfall are found in this division.

2. *Area of reserved forests and lands.*—Two hundred and sixty-two square miles.

3. *How the forest district is split up into subordinate administrative charges—*

Name of range.	Number of beats.
1. Palghat	10
2. Bolampatti	10
3. Mannarghat	10
Total ...	30

A staff of 14 foresters and 73 forest guards and watchers helps the three Rangers in the execution of works and protection of reserves.

4. *Cost of administration—*

	RS.
District Forest Officer	12,498
Extra Assistant Conservator	8,140
Rangers	10,530
Subordinate and protective staff	20,228
Clerical and menial staff	6,689
Vernacular Training School	10,254
Miscellaneous including contingencies	3,240
Total ...	71,579

5. *Cost under other important heads—*

Timber operations	1,13,726
Bamboos	705
Feed and keep of livestock	6,908
Regeneration	5,679
Fire protection	2,711
Roads and bridges—New works	2,451
Buildings—New works	409
Other miscellaneous items	16,212

Total ... 1,48,801

6. *Income from main sources—*

	Rs.
<i>From reserves.</i>	
Timber	1,36,080
Firewood	58,619
Bamboos	15,729
Grazing	4,453
Minor produce	6,825
Miscellaneous items	10,012
Total	2,31,718
Deduct—Refunds	751
Total	2,30,967

<i>From unreserves.</i>	
Timber	3,338
Firewood	2,371
Minor produce	3,303
Total	9,012

7. *Chief works done in the division—*

- (1) Sleeper operations in Silent and Kalladikot valleys.
- (2) Improvement to the road from Nadupathi to Varalipadi Coupe IV.
- (3) Digging a well for the District Forest Officer's quarters.
- (4) Regeneration operations in Silent valley.
- (5) Teak planting in Dhoni Coupe II, Varalipadi Coupe IV (Completion) and Elival Coupe III.
- (6) Elephant-capturing operations in Bolampatti valley. Two elephants valued at Rs. 850 were caught.

OOTACAMUND,
31st August 1931.

A. A. F. MINCHIN,
Conservator of Forests, Sixth Circle.

ADMINISTRATION REPORT OF THE MADRAS FOREST COLLEGE, COIMBATORE, FOR THE PERIOD OF 1st APRIL 1930 TO 31st MARCH 1931.

CHAPTER I.—CONSTITUTION.

Board of Visitors.—Mr. R. D. Richmond, I.F.S., Chief Conservator of Forests, was ex-officio President of the Board of Visitors throughout the year.

The following officers were on the Board during the year:—

Name of officer.	Period.
1. Mr. A. Wimbush	Throughout the year.
2. Mr. C. C. Wilson	
3. Mr. T. Clear	
4. Mr. J. H. Longrigg	14th April 1930 to 16th April 1930.
5. Mr. F. R. Madan	17th April 1930 to 31st March 1930.
6. Mr. T. A. Whitehead	1st April 1930 to 6th February 1931.
7. Mr. K. R. Venkataramana Ayyar	1st April 1930 to 14th May 1930 and 7th February 1931 to 31st March 1931.
8. Mr. A. A. F. Minchin	15th May 1930 to 31st March 1931.

Staff.—Mr. J. C. Wrench continued as Principal throughout the year.

The following officers held appointments as Instructors:—

Mr. E. B. Ramachandra Rao.	First Senior Instructor, 1st April 1930 to 14th July 1930.
	Second Senior Instructor, 15th July 1930 to 31st March 1931.
Mr. A. L. Griffith	From 15th July 1930 as First Senior Instructor.
Mr. P. W. F. Walpole	From 1st April 1930 to 10th July 1930 as Second Senior Instructor.
Mr. C. M. Belliappa	Throughout the year as First Junior Instructor.

As mentioned in last year's Administration Report, the post of Second Junior Instructor was being held in abeyance as a measure of economy: this continued throughout the present year.

Mr. K. Venkatarama Ayyar, Medical Officer, Lawley Road Dispensary, was relieved by Mr. Tyagaraja Ayyar. Mr. G. Viswanatha Ayyar continued as Curator of the Gass Forest Museum and

Mr. K. S. Venkata Rao as Office Manager. The office of the Estate Overseer and Storekeeper were held by the same incumbents as last year as also the posts of senior and junior havildar.

CHAPTER II.—INSTRUCTION.

Teaching.—Lectures were delivered at headquarters to students in accordance with the College time-table. A new feature in this year's tutorial method was the introduction of a projection lantern to illustrate certain lectures.

This proved quite a useful 'aid' to instruction and has certainly increased the students' interest in the subjects.

Practical training at headquarters.—This was given as usual on Saturdays and on a number of other week days. The students were given exercises in silviculture, engineering and survey works on the College estate.

Opportunity was also taken to visit certain buildings in course of construction in the vicinity of the College.

Special lectures.—In October 1930 at headquarters, the College had the pleasure of being addressed by Dr. Lyon, Government Botanist, in the Hawaiian Islands on 'Some Forest Problems in the Hawaiian Islands.' Dr. Lyon was at the time on a tour of inspection in Coimbatore.

In camp as opportunity offered certain officers on special duty were asked and were kind enough to give short talks—illustrated in some cases, by demonstrations, regarding the work upon which they were engaged.

The Sub-Assistant Surgeon with each camp gave lectures on camp hygiene and malaria.

The students during the course of their tours visited the following places of technical interest:—

- (1) The Standard Furniture Company, Limited, Kallai.
- (2) Saw Mills, Messrs. Parry and Company's Mills and Timber Yard.
- (3) The Beypore depot.
- (4) Pollachi Timber depot where the officers in charge were kind enough to show them round and explain objects of interest.

Results of Examination—1929-30 Division.—The senior division students of the year numbered 15; one of whom was from Madras. All passed the final examination and all except two obtained Higher Standard certificates. No Honours were awarded. The percentage highest marks in class examination was 81, the

west 61.5 and the class average 71; while in the final examination percentage highest was 76.7, the lowest 57.5 and the class average 65.

Messrs. R. S. Browne, W. G. Dyson, M. S. Raghavan, V. G. Harrington, D. L. Sathe, H. P. Ward, D. M. Currie and M. V. Laurie, conducted the final examinations in June 1930. On account of ill-health Mr. Laurie could not examine in orals in his subject and this portion of the examination was taken by Mr. D. L. Sathe.

First-aid final examination for the seniors was held in April 1930. The Assistant District Medical Officer, Mr. G. Sankaran Tampi, B.A., M.B.B.S., conducted the examination. All students passed the test excepting one and received certificates of proficiency from the Saint John's Ambulance Association.

In considering the reports on the final examination the Board of Visitors stated that fewer students were of outstanding merit; but that the attainment of the average student varied little from that of the last four years.

The following certificates were awarded in order of merit:—

Number and name of student.	Province from which he comes.
1. S. L. Dube *	Central Provinces.
2. K. M. Thomas	Bombay.
3. Balakadas	Court of Wards.
4. E. Cameron	Central Provinces.
5. M. Gopalaswami Nayudu	Madras.
6. Nirpat Singh Tomar	Central Provinces.
7. L. V. Joshi	Do.
8. Brij Raj Singh	Do.
9. L. S. Mutkekar	Bombay.
10. A. B. Phadke	Jawahar State.
11. R. S. Deshpande	Bombay.
12. H. B. Mohsin	Hyderabad.
13. Y. K. Vaze	Bombay.
14. M. M. Asddi	Do.
15. S. L. Parasar	Central Provinces.

Government and other prizes were awarded as follows:—

1. Gold Medal for the best senior student on marks	S. L. Dube.
2. Campbell-Walker Prize for the best student in Forestry	Do.
3. Brazier Prize for the student likely to make the best outdoor Ranger.	Do.
4. Lodge prize for Engineering.	Do.

* Was also the first student in the Junior year.

5. Madras Conservator's Prize for Survey and Drawing	1. S. L. Dube.
6. Madras Conservator's Prize for Botany	Do.
7. Madras Conservator's Prize for Range Administration	2. R. S. Deshpande.
8. Chief Conservator's Prize for the best junior student	M. Gopalaswami Nayudu.
9. Indian Forester Prize for an essay by present students	H. Sen Gupta.
10. Pentland Shield for the best all-round athlete	Do.
11. Fischer Cup for tennis	B. R. Singh.
12. Moopil Nair Cup for cross country race	Abdul Hamid.
13. Swimming Medal	B. R. Singh.
14. Cowley-Brown Cup for inter-divisional hockey	S. L. Dube.
15. Prize for the best essay in the Madras Forest College Magazine—	1929-31 division.
1928-29	Jai Singh Jaswal.
1929-30	R. B. Gupta.

Prize distribution.—The annual prize-giving was held at the College on the 1st July 1930, when His Excellency Lieutenant-Colonel The Right Honourable Sir George Frederick Stanley, P.C., G.C.I.E., C.M.G., Governor of Madras, gave away the prizes and certificates to the students. This was followed by a garden party, given by the Chief Conservator of Forests, in the College grounds.

1929—1931 Division.—The strength of this class was 16: there were no Madras Government or private students. Students were sent from Central Provinces, Bombay, Hyderabad, Indore, Rewa, Bonai, and Bamra States.

The Final Examination in Physical Science for this division was held in June 1930. The result showed the general standard of knowledge to be satisfactory.

The Chief Conservator's Prize for the best student of this division was awarded to H. Sen Gupta, a student from Bonai State, Orissa Feudatory States.

1930—1932 Division.—This division, the present seniors, number 20. Eighteen of these are from outside provinces and States and two are private students from Madras Presidency.

In the first periodical examination held in November 1930 the standard maintained was satisfactory. The percentage highest marks was 74, the lowest 57 and the class average 69.

CHAPTER III.—ADMINISTRATION, TOURING, HEALTH, AND CONDUCT.

The Board of Visitors' meeting was held on the 30th of June 1930.

In Range Administration, the Board decided that there should be two written papers in the subject; one without books and the other with books carrying with it a redistribution of marks.

The temporary reduction of the post of one Instructor as mentioned in last year's administration report was reconsidered by the Board of Visitors and was ordered to remain in force.

The Principal's recommendation that the working plan prescriptions for the College Demonstration forest should be cancelled with the exception of those works under regeneration, was considered and accepted.

As regards the use of tents in camp, the Board considered that Walayar, Bolampatti, and Mount Stuart camps could better be served by tents than by huts (grass, bamboos). The question of supply of tents was ordered to be taken up by the Principal with the Chief Conservator.

The Board decided that the Sappal-Olavakkot camp should, for reasons of health and better study, be held elsewhere, and, as a provisional measure, Silent Valley in Palghat division was agreed upon.

The Board approved the Principal's suggestion that a projection lantern and slides be purchased for use as an 'aid' to lectures.

Tuition fees.—As a point of interest it may be noted that the concession of the reduced rate of tuition fees for private students from Madras Presidency for the whole course of 23 months was taken advantage of by two students. A further concession was granted enabling payment to be made in two equal instalments.

Touring.—The camping during the year was carried out in accordance with the sanctioned programme. Thondakulam was the site of the camp during the tour at Silent Valley, Palghat division.

The following brief details give the camps visited and outline the more important subjects studied and practical works performed. These are shown, for convenience, under subject heads.

Arambyshola camp—April-May 1930.—This is the final camp for seniors and much of the time is taken up with practical examinations.

In Silviculture the second portion of the fourth half-yearly examination was held and in Survey and Forest Management (Working Plans) the final took place.

Further study, begun the previous year at Bandyshola camp, of shola species and exotics, was continued.

In Engineering students prepared their road plate and estimate.

Bandyshola camp, Coonoor—April–May 1930.—This is a junior division camp and affords students, as a rule, their first introduction to shola and exotic types of forest vegetation.

In Botany and Silviculture, students studied the various exotic and shola types met with in the vicinity. Sample plot measurements were made.

Under Survey and Engineering, the following was done:—Verification of reserve boundaries, survey and map-making by trailer-tape, study of certain buildings, and the preparation of road estimates.

Students constructed a charcoal kiln manufactured charcoal, ascertained its cost, and visited certain local eucalyptus oil distillations to see the process followed.

Walayar—August 1930.—This is the first camp of senior students. As noted in last year's administration report it was decided that the management as regards silvicultural treatment was to be that of the sanctioned working plan for the district for the Pole (coppice) Working Circle.

Instruction was given in tending (weeding and cleaning) on these lines and was carried out wholly by students.

Under Survey, coupes of 1931 and 1932 were surveyed and mapped with the aid of trailer tape and abney level; boundary stones were placed.

Sadivayal camp—September–October 1930.—This being the first camp for the junior division instruction was confined to simple studies relating to this forest.

In Botany a study was made of the characters of the more important trees and shrubs. The silvicultural characteristics of certain trees received special note: opportunity was taken to study the artificial regeneration to be seen at this camp.

Under Survey and Engineering various simple exercises were done after the use of instruments had been taught.

Range administration was studied and a visit was made to the Range office.

Topslip—November–December 1930.—Instruction in Botany was continued and the study of road construction and bridges and the principles of constructions of suspension bridges.

Under silviculture, artificial regeneration of pure and mixed crops, afforded material for study.

Karianshola and the deciduous natural forest of Schali were visited.

Practical examinations in Botany, Utilization, Engineering and Survey were held.

The Conservator, Fifth Circle, gave to the students an outline of the history of the Mount Stuart plantations and lessons learned.

Students witnessed elephant-capturing operations.

Kargudi camp—January–February 1931.—This camp permits the study of a deciduous forest of mixed species and sandal regeneration, but chiefly at this period of the year of anti-fire operations.

The students received practical instruction in fire-protection, road alignment, in Botany and Engineering. They studied the method of extraction, classification and disposal of timber and sandal regeneration.

Nedungayam camp—November–December 1930.—The matter for study in this camp is considerable and includes all subjects, but chiefly, Forest Management and Silviculture.

The third half-yearly examinations in Forest Management, Botany, Survey and Utilization are held here.

On their way to Nilambur students stopped at Calicut for three days and visited the several places of technical interest such as the Standard Furniture Company, Kallai, Bepore Depot, and Saw Mills, Messrs. Parry and Company's Saw Mills and Timber Yard.

Excursions were made to the natural and to the artificially created forests. The silviculture, as locally applied, of teak and other species but principally teak was fully studied. Figures relating to growth and yield were collected.

Under Engineering the students visited bridges and roads under construction. Levels were taken for a bridge over river and estimates prepared.

A number of photographs, representations of certain types of forest crops and certain forms of tending, were taken.

Exploitation and Utilization were fully studied.

Silent Valley—January 1931.—This camp lends itself principally to the study of evergreen forests, botanically and silviculturally, and to problems of exploitation.

Numerous botanical excursions were made.

The presence of a working plan party engaged upon enumeration of the forest in the vicinity of the camp offered a good opportunity for the study and practice of this particular type of work.

A number of photographs were taken.

Practical examination in Silviculture and Range Administration took place.

Tour journals.—A record of work done in the various camps is maintained by each student in form of a Tour Journal for which marks are awarded. Any work carried out by students of use to the Divisional Officers is communicated to them.

Inspection.—The students were inspected in camp at Arambysola (April–May) by the Chief Conservator of Forests and by the Conservator, Fifth Circle, at Topslip (November–December).

Health.—The health of the students both in College and camp has been satisfactory, with the exception of one student who developed typhoid in September 1930.

Suitable precautions were taken. Food and food sources and sanitary conditions were all investigated.

The system of regular exercise consisting of compulsory games and drill and physical training combined with regular medical attendance undoubtedly turns out a healthy and alert student.

Students are weighed on arrival and before leaving the College. It is of interest to note that it is the general tendency for students to show an increase of weight in their second year.

CHAPTER IV.—THE GASS FOREST MUSEUM AND COLLEGE LIBRARY.

Museum.—The Museum continued to afford useful instruction to the students and to be an object of interest to the general public; the latter is shown by the number of visitors which increased from 32,857 to 33,060.

At the beginning of the year, it was thought that the value and usefulness of the Museum could be increased considerably in certain respects, viz., by the adoption of more correct and up-to-date nomenclature; by certain re-arrangement and augmentation of exhibits; by the addition of manufactured articles of technical interest. The year closed with much of this programme completed. In enlargement of the above it may be noted that—

Upon request, the Forest Research Institute, Dehra Dun, was good enough to send certain ply wood articles in which the successive stages of construction were clearly shown. Among the articles sent was a model door in modern design done in veneer; the core being faced on one side with quartered laurel veneer and on the other with poon.

A new section was opened under the heading 'The Industrial uses of Wood'. This sought to illustrate that certain timbers are best suited for certain specific uses. This section is still being stocked.

The photographic collection was enriched by the addition of some useful photographs taken in the various camps visited. A few of these were sent to the Forest Research Officer, Madras. A large number of selected negatives were obtained from the latter and prints taken from them, for instructional purposes.

In addition, upon application, many local divisional officers were good enough to supply articles of minor forest produce and specimens for the herbarium.

A number of selected botanical specimens were sent to the Imperial Forestry Institute, Oxford University.

2. *Library.*—A complete stock-taking and revision of the cataloguing and classification was in progress. This was found necessary as the existing classification had proved inadequate. In spite of the comparative smallness of the Library the work remained incomplete at the end of the year, being hindered by camping periods.

Eighty-eight new volumes of technical and general interest were added to the Library and a large number of old volumes were rebound.

CHAPTER V.—SUPERVISION, WATER-SUPPLY, ROADS, BUILDINGS, ETC.

Supervision.—In general this was satisfactory. The difficulty alluded to in last year's report still exists. Attempts, as a measure of economy, to obtain wire or barbed wire fencing by transfer from within the department failed; except for a few hundred feet and no second hand material was available with the Public Works Department. The need still exists and to a greater degree as the prickly-pear is fast being destroyed by the cochineal insect.

Water-supply.—This is now satisfactory. A new Hornsby 6 horse power pumping engine was installed under proper authority in the place of a Tangye which was old and beyond satisfactory repair.

Roads.—All the existing roads have been kept in repairs though in the case of the more used roads not as well as they need to be.

It has to be recognized that Coimbatore town has grown and that the College is no longer an isolated unit in an unvisited outskirt: the College estate is now a fairly popular place due, for one reason, to the increase in motor cars. Accordingly, larger funds are now required for the greater wear and tear of roads.

Buildings.—Their condition is satisfactory. Repairs have been carried out. The semi-permanent sheds at Arambyshola and Bandyshola call for better attention. Painting and wood-oiling are required. This matter will be reported, separately.

CHAPTER VI.—GENERAL.

College Estate and Arboretum.—The working plan approved in 1921 for working the College estate was cancelled by the Chief Conservator during the year and the management of the estate was left to the Principal to be done to the best advantage on arboricultural lines, cutting and selling such trees as should be removed and replacing them by others of greater interest. In conformity with this order several of the coupes were thinned and planted or sown.

It is hoped to make the College arboretum more representative as funds permit. With this in view about 35 different species of plants of botanical interest were obtained from Agri-Horticultural Society, Madras, and planted in the arboretum.

Sowing and planting in certain coupes and along avenues was done.

Stock-taking.—The stock at the College was checked in detail in July 1930 by the staff and the articles found useless or unserviceable were written off under proper sanction.

Games.—The standard maintained has been satisfactory and in athletics distinctly good. During the year instead of the usual two days, three days were made compulsory for games during head-quarter terms.

Games continued in camps but there, as a rule, they necessarily took a different form. It may be mentioned that in those camps where the ground for recreation is limited, the tug-of-war and the 'weight' are useful forms of recreation.

Swimming.—Swimming though not in the syllabus is compulsory. There are two camps in which swimming can be practised, viz., Kargudi (for juniors) and Nilambur (for seniors). A prize is awarded by the College Athletic Club for the best swimmer in each division.

Debating society.—A debating society was started during the year. Technical and non-technical subjects are debated, alternately, a meeting being held every Friday evening during head-quarter terms.

Essay prizes.—Mr. A. A. F. Minchin, Conservator of Forests, s pleased to offer two prizes for the two best essays for both the divisions, the subject for essay being—

Seniors.—"To prepare an address to small children aged between 8 and 11 at a primary school regarding 'The Utility of Forests'."

Juniors.—"To address a class of young people of secondary school, aged between 14 to 16 on 'The value of Forests in the Country'."

The prize for the seniors was won by student M. Haq; for juniors by student V. N. Sharangapani.

The standard attained was said to be satisfactory.

J. C. WRENCH,
Principal, Madras Forest College, Coimbatore

COIMBATORE,
29th August 1931.

STATEMENT I.—Statement showing revenue and expenditure at the Madras Forest College, Coimbatore, during 1930–31.

<i>Receipts.</i>				<i>Amount.</i>	
Budget head.					
VIII. Forests—(c) Miscellaneous—				RS.	A. P.
(2) Forest College	...	...	...	55,243	2 0
(3) Rents	...	...	...	1,195	3 0
Total				56,438	5 0
<i>Deduct</i> —Refunds				...	...
Net Revenue				56,438	5 0

Expenditure.

8. b. Conservancy and Works.

Maintenance, repair and renewals—Communications and buildings Forest College work	...	...	...	5,378	1 10
Non-voted—Rates and taxes	...	...	...	98	15 6

8. c. Establishment—D. Forest College.

Pay of officers—					
Non-voted	...	...	...	17,087	14 0
Voted	...	...	...	21,957	14 0
Pay of establishment—					
Voted—Permanent	...	...	...	12,719	12 0
Travelling allowances—					
Non-voted (including passage money)	...	...	...	2,126	5 0
Voted	...	...	...	3,774	9 0
Honoraria—Voted	...	...	...	855	0 0
Non-contract contingencies—Non-voted—					
Rates and taxes	...	...	...	19	0 0
Contingencies—Voted—					
Pay of menials	...	...	...	2,186	3 0
Rents	...	...	...	...	...
Telephone charges	...	...	...	235	0 0
Miscellaneous	...	...	...	4,414	1 0
Grants-in-aid—Recurring—Voted—Miscellaneous	...	...	...	400	0 0
Charges payable to Government departments and others.	...	...	...	6,236	7 0
Supplies and services—General—					
Apparatus and materials	...	...	...	4,725	12 0
Books and periodicals	...	...	...	301	1 0
Miscellaneous	...	...	...	2,832	6 0
Total Expenditure				85,348	5 4

RS. A. P.

RS. A. P.

Deduct—

I. Revenue realized ... 56,438 5 0

II. Expenditure on Museum—

	RS.	A. P.
(a) Pay of Curator	1,663	4 0
(b) Pay of Museum watchers	321	13 0
(c) Other expenses at the Museum in connexion with exhibits	68	1 6

2,053	2 6	2,053	2 6	58,491	7 6
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Net cost on account of the College	...	26,856	13 10
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Note.—March final figures from Accountant-General have not been received But adjustments received so far have been taken into account.

STATEMENT No. III—Madras Forest College, Coimbatore division—1930–31.

Serial number and name of student.	Circle or State to which attached.
1. Z. Ariel	Central Provinces.
2. G. P. Tiwari	Do.
3. M. I. Khan	Do.
4. J. M. Singh	Do.
5. R. A. Mandke	Bombay.
6. H. P. Sanap	Do.
7. M. A. Naik	Do.
8. V. C. Yellamalli	Do.
9. V. N. Sharangapani	Do.
10. P. M. Taggerse	Do.
11. Moinuddin	Hyderabad.
12. M. Ali Khan	Do.
13. G. Mahomood	Do.
14. T. K. Bhagawant	Indore.
15. B. T. Binewale	Baroda.
16. J. M. Daniel	Bihar and Orissa.
17. A. N. Mahakud	Athmalik.
18. R. C. Parikh	Rajpipla.
19. K. C. Raj	Private.
20. P. S. Rajamany	Do.

COIMBATORE,
27th August 1931.

J. C. WRENCH,
Principal, Madras Forest College,
Coimbatore.

DIVISION—ADMINISTRATION REPORT OF THE FOREST
UTILIZATION FOR THE YEAR 1930-31.

At the commencement of the year the division continued to hold control of the following timber depots:—

Beyppore (Nilambur commercial concern).

Pollachi (Mount Stuart commercial concern).

Olavakkot sawn material depot (Chenat Nair commercial concern).

Kasaragod (South Mangalore division).

Nanjangod (Wynaad division).

The sleeper depot at Pollachi (Valparai Sleeper project).

Up to the end of the year, with the exception of the log depots, the organization and control of the sawn material depots were carried out by the Forest Utilization Officer assisted by Assistant Forest Utilization Officer, both, with headquarters in Madras. The control of all the logs depots was transferred to the districts on 1st December 1930 except Kasaragod log depot which was transferred in June 1930. The Valparai sleeper depot was transferred to the district on 1st April 1931.

The details of the staff in the division at the end of the year are shown under the heading of the Administration.

Operations.—According to the audited figures the turnover of the division for 1930-31 is Rs. 12,43,547 showing a decrease of Rs. 44,781. At the same time the overheads of the division were reduced from 3.62 per cent in 1929-30 to 2.36 per cent in 1930-31.

Due to the transfer of functions between the Forest Utilization Officer and Divisional officers, it is extremely difficult to compare the results with last year's figures as full details are available only for the first eight months of the year. The figures as is to be expected show a considerable fall in revenue realized by sale of sawn timber and a corresponding increase by sale of timber in log.

Considering the slump in world trade which indirectly affects our sales and the political unrest of the last half of the year under review, results must be considered satisfactory.

Details of the total turnover in 1930-31 are given in Statement I.

Beyppore depot.—The market opened fairly well, but from June onwards became dull. Negotiations with a private party resulted in the disposal of large stocks of teak, the accumulation

of which gave cause for anxiety, at prices which were not high, but which were better than could have been obtained in auction. These stocks are being utilized for supply of teak to the railways and hence are not being held up against an improved market.

A similar arrangement in respect of *Xylia Xylocarpa* was made and enabled stocks of this species also to be cleared at favourable rates.

Five auctions were held during the year.

The timber dealings during the year up to the end of November 1930 for logs, and for the whole year for scantlings are given in Statement II.

Pollachi depot.—Auction sales of logs were held monthly during the year. The receipts of logs (including opening stocks) were 82,741 cubic feet and the disposals were 67,191 cubic feet. The sales were fairly attended during the early part of the year, but there was a tendency for a combine in some of the sales during the latter part of the year. A decline in attendance was noticed and it was proposed to suspend auctions for a short time till an improvement in the condition is seen. Prices for teak were unsteady and the junglewood species showed a decided falling tendency.

The market for spokes and felloes was dull and the experiment to find a market for Pollachi spokes and felloes in Guntur was not a success.

The transactions in sawn timber were small as no new stocks came forward consequent on the closure of mills.

The stock of sawn timber on 1st April 1930 was 9,900 cubic feet, receipts 497 cubic feet, and the disposals were 5,707 cubic feet.

Details of receipts and disposals are given in Statement III.

Kasaragod depot.—The balance of log stocks at the beginning of the year was 5,065 cubic feet, receipts being 49 cubic feet, the disposals were 5,114 cubic feet. The receipts including opening stock of sawn materials were 56,013 cubic feet, the disposals were 33,979 cubic feet.

Details of receipts and disposals are given in Statement IV.

Nanjangod depot.—The receipts including opening stock of logs up to end of November 1930 were 26,271 cubic feet, the disposals were 9,218 cubic feet. The prices realized are fair considering the present depressed condition of the timber market. Auctions were not very well attended and sales were made by private treaty at fair rates. Total receipts of scantlings including opening stock were 28,126 cubic feet and the disposals were 18,679 cubic feet.

Details of receipts and disposals are given in Statement V.

Olavakkot depot.—As the mill closed in November 1929 and practically all stock in hand was sold, disposals during the year were very small. Steps have since been taken to clear the balance.

Other operations.—Statement VI shows the details of the number of sleepers actually despatched to the railways during 1930-31 and the amounts realized. The railways agreed to accept from the Forest department 35,900 broad gauges and 50,000 metre gauges. Of these 34,650 broad gauges and 48,950 metre gauges were passed within 31st March 1931. 32,912 broad gauges and 46,853 metre gauges were despatched before 31st March 1931 and the balance during April 1931. Besides 2,600 narrow gauge sleepers were also passed and supplied within 31st March 1931. All the above sleepers were passed by the Forest Utilization Officer and the Assistant Forest Utilization Officer.

Inspection of depots and auction sales.—The Forest Utilization Officer and Assistant Forest Utilization Officer toured continually throughout the year passing sleepers, holding monthly auctions, inspecting the depots and interviewing merchants, 210 days being spent on tour.

All the depots were inspected at regular intervals throughout the year and stock taking at the end of the year was made by the Assistant Forest Utilization Officer and Forest Utilization Officer.

Overseas trade.—The small outstanding with Messrs. W. W. Howard Bros. & Co., London, was accounted for by the High Commissioner for India, London, who was auditing their accounts and the amount was duly credited to the respective divisions.

The positions of consignment sales are shown in Statement VII. Except a few consignments during the early part of the year already earmarked during the previous year, export of logs on consignment sale was stopped considering the trade slump all over the world. Some efforts were made to interest the American markets by sending samples of hardwoods suitable for veneer tests.

Renewed efforts were being made to interest the Jail department and the Public Works Department to indent upon the Forest department direct for their requirements in logs and the jails at Coimbatore, Trichinopoly and Cannanore purchased from the department 3,436 cubic feet of teak logs to the value of Rs. 9,761 during 1930-31. Further, Messrs. Binny & Co. were supplied with 6,936 cubic feet teak valued at Rs. 25,741 and other junglewood logs of 932 cubic feet (*Adina* and *Grewia tilaefolia*) valued at Rs. 1,977-8-0.

Professional advice regarding suitable woods for industrial and other purposes was freely given by the Forest Utilization Officer to many enquiries received in the office.

Consequent on the refusal of Messrs. T. Namberumal Chetti & Sons to sign the agreement for the sale of sawn timber in January 1931 the disposal of the sawn stock existing in the depots engaged the special attention of the Forest Utilization Officer and tenders were called for the purchase of sawn timber. No satisfactory tenders were received and later in the year, the department introduced a reduced price list with fairly satisfactory results.

Special measures were adopted consequent on the unsatisfactory economic conditions prevailing.

In consultation with higher authority the policy now being followed is to restrict production and to hold present stocks unless reasonable prices are realized. By doing so we prevent private speculation which is dangerous to every one connected with the timber trade. It is realized that a certain risk of degrade is involved especially with junglewood species, but taking a broad view, it is better for the risk to be shouldered by Government rather than that merchants should be encouraged to speculate on very doubtful conditions and against a future impossible to forecast, a procedure which would inevitably result in a period of instability in the timber market. Our aim is as far as possible to keep the balance between production and consumption.

This policy may be open to criticism by vested interests who have hitherto been in a position to regulate the market to a certain extent and have actually done so. They naturally object to losing the measure of control hitherto enjoyed.

I consider that this report is the opportunity of making clear to the public that at the moment Government are the only producers in quantity of teak in the Presidency since supplies from private forests are almost exhausted. They can accordingly control the teak market. As the price of junglewoods varies with the price of teak they will therefore be in a position to influence the whole market should it be necessary.

Financial.—The turnover of the division during the year was Rs. 12,43,547 and the figures for the division since its inception are given below :—

							LAKHS.
							RS.
1925-26	...	...	...	...	...	...	31½
1926-27	...	...	...	...	...	...	91¼
1927-28	...	...	...	...	...	...	121¼
1928-29	...	...	...	...	...	...	131¼
1929-30	...	...	...	...	...	...	12¾

Forest economy.—The following periodicals were received and culated to all the officers of the department :—

Timberman.	Indian Trade Journal.
Hardwood Record.	Indian Forester.
Timber Trades Journal.	

Ledger filing.—Important articles from journals, etc., are eing ledger filed regularly.

Liaison between the Forest Economist, Dehra Dun, and the Forest Utilization Officer.—Closest co-operation between the Forest Research Institute, Dehra Dun, and the Forest Utilization Officer was maintained, as usual, in the matter of supplies of timber for various tests carried out in Dehra Dun. The supply of timbers for the various projects made during 1930-31 are given below :—

Project I.

Division.	Species.	NOS.	CUBIC FEET.
North Mangalore—	Canarium strictum ...	5	95
	Lophopetallum wightianum ...	5	76
	Machillus macrantha ...	5	112
	Myristica attenuata ...	5	70
South Coimbatore—	Mimusops Elengi ...	5	134
	Stereospermum xylocarpum ...	5	

Girronn, reticulata, Sterculia alata and Calophyllum Inophyllum were not supplied as they are not available.

Project II.

	NOS.	CUBIC FEET.
North Mangalore—Canarium strictum ...	5	164
Machillus macrantha.	5	173

Project IV.

North Mangalore—Pæciloneuron indicum	200	broad gauge sleepers.
Ganjam—Bursera serrata	70	broad guage sleepers.

The full number of Bursera serrata sleepers required for the Project IV test was not supplied as the District Forest Officer, Ganjam, since reported that they were not available in commercial quantities and it was dropped.

Project VII.

	NOS.	CUBIC FEET.
North Mangalore—Machillus macrantha ...	17	502
Nilambur—Terminalia paniculata ...	16	399

Project VIII.

Besides *Calophyllum wightianum*, *Bischofia javanica*, *Dichopsis elliptica*, *Swetenia Mahogani* supplied for the above tests during the previous year, for which preliminary reports were received during the year, arrangements were made for the supply of the following species to be tested under this project:—

Calophyllum tomentosum.

Terminalia paniculata.

Eugenia gardneri

Terminalia belerica.

Machillus macrantha.

Hopea parviflora.

Vateria Indica.

Eleocarpus tuberculatus.

The supplies of the above timbers were completed only during June 1931.

Other experiments.—Sapwood sleepers of *Calophyllum tomentosum*, *Calophyllum wightianum*, *Hopea parviflora*, *Lagerstrœmia lanceolata* and *Xylia xylocarpa* were arranged to be supplied for special experiment to collect data with reference to the treatment of sapwood of these species.

Four logs of *Pœciloneuron indicum* were also supplied during March 1931 for experimental test for golf shafts and fishing rods.

White-ant test with regard to *Terminalia arjuna* is also being arranged.

Enquiries for authentic wood specimens of certain species required by the Forest Research Institute, Dehra Dun, were also arranged to be supplied.

Five tons of *Ochlandra travancorica* (Eta bamboos) were arranged to be supplied from Tinnevely to the Forest Research Institute, Dehra Dun, in connexion with experiment on paper manufacture.

Market report.—The report on markets prepared by Mr. J. A. Master was printed and received and the report is being made up to date as far as possible by adding useful information.

Liaison with the Timber Adviser to the High Commissioner for India, London.—Sample woods for turnery work were supplied to the Empire Marketting Board, London, of the following species:—

Hardwickia binata from North Salem.

Diospyros melanoxydon from Kurnool West.

Hardwickia pinnata from South Mangalore.

An attempt was made to interest the British Railways in tropical hardwood railway keys. The matter is still under consideration.

Mahogany logs from Nilambur were sent for trials in cabinet work in the Forest Products Research Laboratory, Bucks, England.

Minor Forest Products.—Mr. M. A. Hafiz was in charge of his section till 30th September 1930 when he went on leave; the Forest Utilization Officer took over this part of the work from him from 1st October 1930.

Enquiries received from firms and individuals, local and foreign, were dealt with as usual.

Minor forest produce samples for the Commercial Samples Room, India House, London, are being supplied through the Forest Economist, Dehra Dun.

The monthly minor forest produce price list continued to be circulated to Conservators and District Forest Officers.

The market was unsteady and dull during the year. The increase in imports of wattle bark at cheap rates and the depression in the tanned hides market adversely affected the sale of local tan barks.

Yellow ochre.—Attempts were made to introduce in the market the mineral 'Yellow ochre' found in the North Cuddapah division. Samples however were not up to the standard required by the firms dealing in this produce.

Hopea parviflora bark.—Attempts were made to renew the demand for this tan stuff but without success. There is little likelihood of this bark being able to oust existing tanning materials now obtainable at very low rates.

Cassia fistula.—The investigation into the tanning content of konnai bark of various ages continued. Results will be issued in due course in a pamphlet.

Cassia auriculata.—The experiments to carry out the systematic examination of this valuable tan bark from seedling plants and coppice shoots of varying ages and growing on different soils were continued by the respective District Forest Officers in the three districts of Anantapur, Vizagapatam and Nellore. No results can be expected for some time, as the establishment of the necessary series of plots will take five years. The experiment at Pecheruvu (Kurnool West district) was dropped.

Anogeissus latifolia leaves and sumac.—Owing to the difficulty and expense of shade drying large quantities of leaves, the result of which was very favourably reported on, investigation into the tannin content of leaves dried in the sun—a much cheaper method—was carried out by the Imperial Institute with samples supplied by District Forest Officer, Madura.

A. Pale green tender leaves, sun-dried.

B. Large green but tender leaves, sun-dried.

C. Young leaves and twigs mostly broken.

The comparison of the results of examination of the samples of sun-dried and shade-dried leaves received from the Imperial Institute, London, are given below :—

	Present leaves (sun-dried).			Previous samples (shade-dried).		
	A. Small leaves.	B. Large leaves.	C. Dhawa sumao (young leaves and stalks).	A. Small leaves.	B. Large leaves.	C. Dhawa sumao (young leaves and stalks).
	PER CENT.	PER CENT.	PER CENT.	PER CENT.	PER CENT.	PER CENT.
Moisture	18.8	11.5	12.7	12.8	12.3	14.0
Insoluble matter ..	42.9	53.9	37.0	44.3	44.6	33.7
Extractive matter (non- tans).	17.1	15.1	15.2	10.0	11.0	13.8
Tannin	28.2	19.5	35.1	32.9	32.2	38.5
Ash	3.7	4.6	4.0	4.4	3.9	4.0

The results of analysis showed that in every case the tannin content of sun-dried leaves was less than that of shade-dried leaves.

Collection of information.—Literature on minor forest products continued to be recorded in the connected ledger files.

Lac.—The policy of introducing lac in suitable areas was under supervision of the Deputy Forest Utilization Officer until October. On his transfer consequent on the abolition of the post, Mr. Hafiz continued to handle this work under the Conservator of Forests, V Circle. A consolidated report on work done is given below :—

Lac Operations.

General.—Wherever lac hosts occur in fairly large numbers, they can be utilized to cultivate lac provided the climatic conditions of those localities are suitable for introducing the cultivation of lac. Lac operations being new and labour and the subordinates quite ignorant of them, it was decided that before embarking on regular schemes of lac cultivation some experimental crops should be raised to test the climatic conditions of those localities and to know definitely whether lac can grow there throughout the year, and also to train up the local staff and labour in the various operations connected with lac work. Waste of money and energy could thus be avoided if the limits and the optimum conditions of each locality are first definitely ascertained.

2. During the year lac experiments were carried out in Central Mlem, North Coimbatore, Madura and Palghat divisions.

Central Salem.—Experimental cultivation of lac on *Shorea alura* was carried out at Chitteris on the plateau. Three crops were raised—the pre-monsoon crop from April to July 1930, the monsoon crop from August to December 1930, and the post-monsoon crop from January to April 1931. The monsoon crop yielded the richest harvest—nearly six times the seed used.

These experiments have demonstrated the suitability of the Chitteri plateau for the production of lac, and that the local Malayees can be trained up in lac operations to carry on the cultivation of lac as a village industry, as in parts of Bihar and Central Provinces. *Shorea talura*, *Schleichera trijuga* and other lac hosts can be successfully utilized to produce lac. In view, however, of the present low price for lac, it was decided that no further developments in the Chitteris should be made until the market for lac shows a decided improvement.

North Coimbatore.—(a) The cultivation of lac on *Shorea talura* was started at Onnathittu and Mavanatham. In the absence of pruned trees it was decided to infect unpruned shoots which looked suitable. This was done chiefly to avoid delay as *Shorea talura* should generally be pruned two years before infecting it with lac.

Two crops were raised during the year. The monsoon crop, which was started in July 1930, matured only in January 1931. It took 5½ months (a month longer than at Chitteri) to mature. The post-monsoon crop, however, took only 3½ months—January to April 1931.

There was heavy mortality in the first month after infection due to the unsuitability of many infected shoots, which was not unexpected, but the crop on several branches developed fairly well in both the localities. The yield was about the seed used. The yield though small was sufficient to show that lac can grow there from July to April.

(b) Kusum (*Schleichera trijuga*) brood lac obtained from Muri (Bihar) was put on pruned *Butea frondosa* and *Zizyphus jujuba* trees at Hassanur in July 1930. The crop on almost all the *Zizyphus* trees developed successfully but on *Butea* shoots, the bark of which had since infection become corky, the lac insects died by September. The crop was harvested in January 1931 and the yield from the *Zizyphus* trees was more than thrice the seeds used. The encrustation on most of the shoots was quite thick and continuous.

Madura.—At Vannathiparai in Madura district, *Schleichera trijuga* trees were infected. For want of pruned trees, suitable unpruned shoots were inoculated in order to avoid delay in starting the experiments.

Two crops were tried with the Kusum brood lac imported from Bihar. The crops developed well in the beginning but the heavy unusual rains in February 1930 caused so great a havoc to the first crop that the settlement disappeared almost completely from most of the shoots. The second crop had been subject to severe attack by numerous predators of lac. Shoots which escaped predator attack developed thick encrustation over their full length, which have served as a good sample of the size of the lac encrustation the crop can produce in this locality.

Pruning of host trees.—It can be said, on the experience so far gained, that success or failure of lac cultivation depends to much greater extent on careful and timely pruning of lac hosts than it is generally believed. Observations made so far show that *Butea frondosa* should be pruned late in April for July infection. *Zizyphus jujuba* responds successfully to pruning done early in April for July infection and in the beginning of July for October infection. *Schleichera trijuga* trees are to be pruned in the beginning of February before the leaves turn yellow and are shed.

In Palghat division, some *Schleichera trijuga* trees in Kottanikunnu reserve were pruned in February 1931. Over a thousand *Shorea talura* trees were pruned in North Coimbatore, and about 5,000 poles on the Chitteri plateau in Central Salem division. In Madura nearly a hundred *Schleichera* trees were lopped.

Administration.

Forest Utilization Officer	...	Mr. H. P. Ward from 1st April to the end of the year.
Assistant Forest Utilization Officer.		Mr. V. S. Kuppuswami from 1st April 1930 to 3rd February 1931.
		Mr. J. A. Wilson from 4th February 1931 to the end of the year.
Deputy Forest Utilization Officer.		Mr. Muhammad Abdul Hafiz from 1st April to 30th September 1930. (The separate post by Deputy Forest Utilization Officer was abolished from 1st October 1930.)

STATEMENT I.—Statement of turnover of the Forest Utilization Division
for 1930-31.

Depot.	Logs.	Scant- lings and rejected scant- lings.	Sleepers and rejec- tions.	Spokes and felloes, Bamboos and Miscel- laneous.	Consign- ment sales.	Total.
	RS.	RS.	RS.	RS.	RS.	RS.
Beypore	1,77,878	21,480	..	3,660	1,877	2,04,895
Pollachi	90,628	10,271	..	811	319	1,02,029
Olavakkot	..	180	..	5	..	185
Kasaragod	3,824	16,880	27,544	79	..	78,397
Wynaad division includ- ing Nanjangud and Mysore	31,166	17,242	..	..	14,811	96,219
Vulparai project	..	340	1,14,386	..	..	1,14,726
Beypore tope	..	..	..	2,693	..	2,693
Total ..	3,06,556	1,26,393	1,41,930	7,248	17,007	16,99,144

Details—

* Sale to Railways									26,852
Sale of rejections									1,280
									28,132
Less adjustment									688
									27,514
† Sleepers to Railways									1,12,104
Rejections									2,398
									1,14,502
Less adjustments									116
									1,14,386

Value of sleepers passed on behalf of districts for purposes of turnover only—

	Rs.	Rs.
Nilambur	63,978	
Kallai	42,281	
Wynaad	36,298	
North Mangalore	27,362	
South Mangalore	4,709	
Palghat	1,68,357	
Tinnevely	2,510	
		3,41,495

Log sales conducted after 1st December 1930—

Nilunbar-Beypore Depot	1,48,881
South Coimbatore-Pollachi	39,275
Wynad-Mysore	68,192
Nanjangud	46,580
	3,02,908

8,41,103
5,99,144
<u>12,43,547</u>

STATEMENT II.—Beypore Depot—Receipts and disposals for 1930-31.

Species.	Opening stock.	Receipts.	Total.	Disposal.		Closing stock.	Sale amount.	Average rate per cubic foot.
				Sales.	Other disposals.			
Logs.								
Teak ..	C.F.T. 32,815	C.F.T. 110,058	C.F.T. 142,873	C.F.T. 49,949	C.F.T. 9	C.F.T. 92,916	RS. 83,813	RS. 1 10 9
Pillamarudu ..	39,957	108,468	148,425	36,119	1,861	108,445	29,068	0 13 3
Karimmarudu ..	..	8,606	8,606	1,316	..	7,290	987	0 12 0
Venteak ..	..	18,064	18,064	5,302	..	12,762	5,037	0 15 2
Iru ..	26,029	7,807	33,836	26,016	266	7,614	24,772	0 15 3
Rosewood ..	57	344	401	57	..	344	65	1 2 3
Mahogany ..	..	1,255	1,255	..	..	1,255	..	..
Natural totk ..	4,314	5,365	9,679	4,309	5	5,365	8,380	1 10 6
Vengai ..	..	678	678	..	..	678	..	..
Thavala ..	..	1,850	1,850	..	81	1,766	..	..
Cheeni ..	..	1,055	1,055	..	725	330	..	..
Palai ..	..	147	147	..	..	147	..	..
Puduvanni ..	..	48	48	..	..	48	..	..
Kanakaidu ..	..	13	13	..	..	13	..	..
Poles and measurables—Nos.	103,172	263,818	3,66,990	1,22,068	5,950	238,972	1,52,112	
	1,762	11,390	13,152	6,326	3	6,823	25,629	
				Add adjustments of last year's sale			137	
							1,77,878	
SAWN TIMBER.								
Teak ..	6,386	535	6,921	2,676	8	4,161	8,276	3 1 0
Group I ..	16,960	3,332	20,292	6,863	147	11,418	12,461	* Rejections. 1 13 1
				1,864			376	
Total ..	23,346	3,867	27,213	11,476	155	15,582	21,128	
By sale of rejections and porotes		RS. 105	Add by sale of logs, poles and measurables				1,77,878	
Saw dust ..	..	27	Do. bamboos and karlas				3,660	
Deak pieces ..	..	251	Add amount realized by overseas consignments sales				1,877	
Deduct adjustment of previous year's sale		21,511					2,04,895	
		31						
		21,480						

STATEMENT III.—Pollachi Depot—Receipts and disposals for 1930-31.

Species.	Opening stock.	Receipts from		Total.	Disposal.		Closing stock.	Sale amount.	Rate.
		District Forest Officer, South Coimbatore.	Others.		Sales.	Others.			
	C.F.T.	C.F.T.	C.F.T.	C.F.T.	C.F.T.	C.F.T.	C.F.T.	RS.	RS. A. P.
Teak	6,426	21,506	820	28,852	{ 21,790 }	980	5,758	51,137	2 5 9
Pillamarudu	1,485	6,661	504	8,650	{ 7,656 }	187	807	7,973	1 0 8
Karimarudu	4,692	7,326	1,297	13,315	{ 8,205 }	315	4,771	6,823	0 13 4
Ventank	1,649	10,368	272	12,289	{ 10,571 }	139	1,579	9,826	0 14 7
Vengai	3,334	2,910	7	6,251	{ 5,637 }	157	557	5,443	0 15 9
Manjukkambai	907	1,647	146	2,700	{ 1,731 }	..	945	1,754	1 0 3
Thadasu	458	4,219	— 6	4,701	{ 4,578 }	..	103	3,813	0 13 4
Rosewood	1,526	3,012	251	4,819	{ 3,782 }	..	1,030	7,235	1 14 7
Vedankarnai	151	355	..	506	{ 143 }	63	..	513	1 2 6
Miscellaneous species	204	452	2	658	{ 482 }	170	..	333	0 11 1
	20,832	58,616	3,293	82,741	65,180	2,011	15,550	94,550	..
Teak poles	..	400	..	400	100	..	..	88	0 3 6 each.
								480	
								95,218	
								4,590	
								90,628	

* Revenue realized by sale of cut ends, rejections, etc.

Deduct adjustment mostly due to resales of timber

STATEMENT III.—Pollachi Depot—Receipts and disposals for 1930-31—contd.

Species.	Opening stock.	Receipts from		Total.	Disposals.		Closing stock.	Sale amount.	Rate.
		District Forest Officer, South Coimbatore.	Others.		Sales.	Others.			
	NOS.	NOS.		NOS.	NOS.	NOS.	NOS.	RS.	RS. A. P.
Teak spokes	7,780	3,240	..	11,020	1,104	..	9,916	811	17 10 1 a set
" fellos	3,893	1,620	..	5,513	552	..	4,961	..	..
Vengai spokes	707	519	..	1,226	..	744	482	..	..
" fellos	351	262	..	613	..	372	244	..	..
Total	12,734	5,641	..	18,375	1,656	1,116	15,603	811	..
Sawn timber—									
Teak	C.F.T. 2,870	C.F.T. 14	..	C.F.T. 2,884	C.F.T. 1,933	..	C.F.T. 951	5,554	2 13 6
Other species	7,030	483	..	7,513	3,771	..	3,739	5,455	1 7 1
Total	9,900	497	..	10,397	5,707	..	4,690	11,009	..
		Add value of missing scantlings recovered from cutting contractor						7	..
		Less adjustments in previous year's sale						11,016	..
								745	..
		Add by sale of logs, poles, etc.						10,271	..
		" " spokes and fellos						90,628	..
		" " " sale of overseas consignment						811	..
								319	..
								1,02,029	..

STATEMENT III (a).—Valparai Sleeper Depot—Receipts and disposals for 1930-31.

Species.	Opening stock.	Receipts.	Total.	Disposal.		Closing stock.	Sale amount.	Average rate.
				Sales.	Others.			
Mesua broad gauge sleepers ..	NOS. 3,843	NOS. 12,541	NOS. 16,484	NOS. 12,469 I Class 197 II Rejections. 1,174	NOS. 6	NOS. 2,638	RS. 1,02,869	RS. A. P. 8 4 0
Mesua metre gauge sleepers ..	28	4,916	4,944	Rejections. 2,717 I Class. 130		2,097	1,083 2,286 8,161	5 8 0, 1 15 4 3 0 0
White cedar scantlings ..	170 cubic feet.	..	170 cubic feet.	170 cubic feet.		..	112 340	0 13 9 2 0 0
				Less adjustments, etc., of previous year's sales ..		..	1,14,841 115	(Value of defective sleepers deducted by Railways).
Total							1,14,726	

STATEMENT IV.—Kasaragod depot—Receipts and disposals for 1930-31.

Species.	Opening stock.	Receipts.		Total.	Disposal.		Closing stock.	Sale amount.	Rate.
		South Mangalore Division.	Others.		Sales.	Others.			
Logs—	C.F.T.	C.F.T.	NOS.	C.F.T.	C.F.T.	NOS.		RS.	RS. A. P.
Pillamaradu ..	1,084	..	..	1,084	1,084	..	..	576	0 8 6
Rosewood ..	214	8	..	222	222	..	..	167	0 12 0
Other species ..	191	41	..	232	232	..	..	131	0 9 1
Teak poles ..	3,576	..	..	3,576	3,576	..	..	3,020	0 13 6
Total ..	5,065	49	..	5,114	5,114	..	..	3,834	..
Mill sawn sleepers—	NOS.	NOS.	NOS.	NOS.	NOS.	NOS.		RS.	RS. A. P.
Xylia B.G. ..	..	..	38	38	35	..	NOS. 3	79	2 4 4
Do. M.G. ..	..	..	112	112	82	..	30	91	1 2 0
Hand sawn Rejections ..	..	..	..	128	..	..	128	..	..
Do. M.G. ..	103	..	..	103	..	..	103	..	..
Eugenia gardneri B.G. ..	10	..	..	10	6	..	4	15	2 8 0
Do. M.G. ..	10	..	..	10	7	..	3	7	1 0 0
Hopca sleepers B.G. ..	254	2,414	..	2,668	2,223	16	148	18,340	8 4 0
Do. M.G. ..	73	527	16	616	281	..	39	762	2 11 5
Xylia sleepers B.G. ..	..	..	..	..	500	..	..	1,500	3 0 0
Do. B.G. Rejections ..	92	50	..	142	77	..	15	106	1 6 0
Do. M.G. Rejections ..	21	2,868	..	2,889	44	..	642	352	8 0 0
	..	..	..	..	83	..	..	191	2 4 10
	..	..	..	..	2,220	..	..	6,660	3 0 0
	..	..	..	..	27	..	..	29	1 1 2
				Less adjustments ..		..	..	28,132	..
								588	(Value of sleepers rejected by railways.)
Total								27,544	

Kasaragod depot—Receipts and disposals for 1930-31—cont.

[illegible]

* The difference in opening balance is due to revised reconciliations made in August 1931.

STATEMENT V.—Nanjangod depot—Receipts and disposals, 1930-31.

Species.	Opening stock.	Receipts from			Total.	Disposals.		Closing stock.	Sale amount.	Average rate.
		Divisions.		Others.		Sales.	Others.			
		C.F.T.	C.F.T.							
Logs—										Rs. A. P.
Teak ..	C.F.T. 3,513	16,119	2,034	C.F.T. 21,696	C.F.T. 8,453	C.F.T. 4	C.F.T. 13,739	Rs. 26,662	3 0 6	
Vengai ..	..	2,479	..	2,479	673	..	1,806	1,328	1 15 7	
Rosewood ..	..	2,096	..	2,096	88	..	2,008	88	0 10 7	
Total ..	3,543	20,694	2,034	26,271	9,214	4	17,053	27,038	..	
				Less adjustment on account of previous year ..				6,080	(due to cancellation of sales, etc.)	
								20,958		
own timber—										
Teak ..	12,506	3,198	128	15,932	12,021	..	3,911	37,631	3 2 1	
Other species ..	9,374	2,220	..	12,194	6,658	..	5,536	9,731	1 7 4	
Total ..	22,580	5,418	128	28,126	18,679	..	9,447	47,362	..	
				Less adjustment on account of previous year's sales ..				120		
								47,242		
								20,958		
								47,242		
								13,208		
								81,408		
								14,811		
								20,958		

Logs ..

Scantlings ..

Add revenue from sale of 3,302 c.ft. of logs from Mysore Depot ..

Add overseas consignment sales ..

STATEMENT V-A.—Olavakkot—Receipts and disposals of sawn timber for 1930-31.

Species.	Opening stock.	Receipts.	Total.	Disposal		Closing stock.	Sale amount.	Average rate.
				Sales.	Others.			
Other species	C.F.T. 1,344	C.F.T. 212	C.F.T. 1,556	C.F.T. 212	C.F.T. Nil.	C.F.T. 1,344	RS. 180	RS. A. P. 0 13 7
Total ..	1,344	212	1,556	212	Nil	1,344	180	..
Revenue realized by sale of a rocking chair ..								5
								185

STATEMENT VI.—Statement showing sleepers despatched in 1930-31 to the Railway.

Division. (1)	Species. (2)	Broad gauge I Class.			Broad gauge II Class.		
		Number. (3)	Rate. (4)	Value. (5)	Number. (6)	Rate. (7)	Value. (8)
Nilambur .. {	Xylia ..	3,422	RS. A. 8 0	27,376 0	8	RS. A. 5 5	RS. A. 42 8
	Teak ..	12	9 8	114 0	..	..	..
	Hopea ..	76	8 4	627 0	..	..	..
	Mesua ..	299	8 4	2,466 12	..	..	..
	Total ..	3,809	..	30,583 12	8	..	42 8
Wynaad .. {	Mesua ..	1,237	8 4	10,205 4	25	5 8	137 8
	Mesua ..	1,998	8 4	16,483 8	..	..	..
	Total ..	3,235	..	26,688 12	25	..	137 8
Palghat division Olavakkot and Melattur .. {	Mesua ..	12,988	8 4	1,07,151 0	87	5 8	478 8
	Hopea ..	8	8 4	66 0	..	..	..
	Irul ..	306	8 0	2,448 0	6	5 5	31 14
	Total ..	13,302	..	1,09,665 0	93	..	510 6
North Mangalore .. {	Irul ..	250	8 0	2,000 0	..	5 8	..
	Hopea ..	1,143	8 4	9,429 12	2	..	11 0
	Total ..	1,393	..	11,429 12	2	..	11 0
South Mangalore ..	Irul ..	25	8 0	200 0	..	..	..
	Mesua ..	219	8 4	2,054 4	..	..	..
Tinnevely .. {	Hopea ..	2,223	8 4	18,339 12	..	..	..
	Irul ..	44	8 0	352 0	..	..	..
	Total ..	2,267	..	18,691 12	..	..	..
Kasaragod ..	Mesua ..	12,469	8 4	1,02,869 4	187	5 8	1,083 8
	Irul ..	3,428	8 0	27,424 0	27	5 5	143 7
	Grand Total ..	40,177	..	3,29,606 8	352	..	1,928 5

STATEMENT VI.—Statement showing sleepers despatched in 1930-31 to the Railway—cont.

Division.	Species.	Metre gauge I Class.			Metre gauge II Class.			Narrow gauge sleepers.			Total value.
		Number. (9)	Rate. (10)	Value. (11)	Number. (12)	Rate (13)	Value. (14)	Number. (15)	Rate. (16)	Value. (17)	
Nilambur	Xylia	11,995	RS. 3	35,985	36	RS. A. 2 0	72 0	..	..	..	RS. A. ..
	Tenk	735	4	2,910	7	2 11	18 13	..	..	..	..
	Hopea	19	3	57	..	..	..	..	..	..	..
Wynaad	Mesua	93	8	279	..	..	..	..	..	..	..
	Total	12,842	..	39,261	43	..	90 13	..	..	..	69,978 1
	Mesua	398	3	1,194	5	2 0	10 0	..	..	..	..
Palghat division Olarakkot and Melattur	Mesua	2,756	3	8,268	..	..	..	..	..	..	..
	Total	3,154	..	9,462	5	..	10 0	..	..	..	36,298-4
	Mesua	14,789	3	44,367	19	2 0	38 0	..	..	..	..
North Mangalore	Hopea	6	3	18	..	..	..	..	..	..	..
	Irul	1,253	3	3,759	..	..	..	..	..	..	..
	Total	16,048	..	48,144	19	..	38 0	..	..	..	1,58,357 6
South Mangalore	Irul	260	3	780	..	..	..	..	..	..	..
	Hopea	5,017	3	15,141	..	..	..	..	..	..	..
	Total	5,307	..	15,921	..	..	..	..	..	..	27,361 12
Tinnevely	Irul	1,503	3	4,509	..	..	..	..	..	..	4,709-0
	Mesua	152	3	456	..	..	..	..	..	..	2,510 4
	Hopea	500	3	1,500	..	..	..	..	..	..	..
Kasaragod	Irul	2,220	3	6,660	..	..	..	..	..	..	..
	Total	2,720	..	8,160	..	..	..	..	..	..	26,851 12
Valparai	Mesua	2,717	3	8,151	..	..	..	..	..	..	1,12,103 12
	Irul	3,170	3	9,510	2	2 0	4 0	2,600	2	5,200	42,281 7
	Grand Total	47,613	..	1,43,574	69	..	142 13	2,600	..	5,200	4,80,451-10

STATEMENT VII.—Consignment sales through Messrs. Peirce Leslie & Co. for 1930-31.

Division.	Species.	Stock on 1st April 1930.	Des- patches in 1930-31.	Total quantity.	Sales in 1930-31.		Expenses including Forest Utilization Officer's overheads.	Net proceeds.	Average rate per cubic foot on the gross proceeds.	Average rate per cubic foot on the net proceeds.	Stock on 31st March 1931.
					Quantity.	Gross sale- proceeds as per account sales.					
1. Wynaad	Laurel	C.F.T. 1,479	C.F.T. 3,109	C.F.T. 4,588	C.F.T. 1,831	RS. A. P. 4,934 15 1	RS. A. P. 3,033 8 7	RS. A. P. 1,901 6 6	RS. A. P. 2 11 1	RS. A. P. 1 0 7	C.F.T. 2,757
2. Nilambur	Rosewood	239	202	441	355	1,350 10 5	430 0 9	920 9 8	3 12 10	2 9 6	86
	Laurel	..	778	778	778	1,337 3 1	1,663 0 7	-225 13 6	1 11 6	0 4 8	..
3. South Coim- batore.	Haldu	118	..	118	118	-133 5 9	128 2 1	-261 7 10	-1 2 1	2 3 5	..
	Samples of miscellaneous species sup- plied free of cost.	..	264	264	264	* 319 0 0	594 6 7	-275 6 7	..	..	..
	Rosewood	674	..	674	..	..	..	..	..	..	674
4. Nilgiris	Total	2,510	4,363	6,863	3,346	7,808 6 10	5,749 2 7	2,059 4 3	..	..	3,517
Direct Oversea consignment sales.											
Wynaad	Laurel	1,501	428	1,929	1,929	8,246	1,312 0 3	6,933 15 9	4 4 5	3 9 6	†
	Rosewood	10	..	40	40	280	28 4 0	251 12 0	7 0 0	6 4 8	..
	Pillamaradu	..	135	135	135	540	66 7 1	473 8 11	4 0 0	3 8 1	..
Nilambur	Total	1,511	563	2,104	2,104	9,066	1,406 11 4	7,659 4 8	..	..	..

* Represents recovery of expenditure

† Sold to Messrs. Acme Veneer and Lumber Co. and Wood Mosaic & Co., United States of America and Mullinson & Sons, London.

MADRAS,

J. A. WILSON,

Forest Utilization Officer.

26th August 1931.

ADMINISTRATION REPORT—1930-31—FOREST ENGINEERING DIVISION, MADRAS.

The charge of the division was held by the following officers :—

(1) E. S. Dawson, Esq., I.F.E.S., from 1st April 1930 to 5th June 1930 and from 8th January 1931 to 31st March 1931.

(2) J. A. Wilson, Esq., I.F.S., from 5th June 1930 afternoon to 7th January 1931.

2. *Chenat Nair Exploitation*.—The concern was under liquidation and all extraction activities were stopped from 1st April 1930.

The transactions of the concern were financed by this division from the ordinary budget heads up to October 1930 and later on adjusted to the personal ledger account of the concern.

The sleepers which were in stock at the close of the previous year were disposed of during the year and Rs. 9,600 was realized.

Book debts amounting to about Rs. 1,19,250 were also realized during the year.

3. *Communications and Buildings*.—The permanent and temporary roads and buildings with the exception of the mill buildings were transferred to the Palghat division at the following value resulting in a loss of Rs. 35,694-15-2.

Details.	Book value.	Value at which transferred.	Loss on transfer.
	RS. A. P.	RS. A. P.	RS. A. P.
Permanent roads	12,006 7 4	.. .. .	12,006 7 4
Extraction roads	26,374 7 10	2,286 0 0	24,088 7 10
Saw Mill buildings—			
Fitters' quarters I and II	3,735 15 0	3,735 15 0	.. .. .
Temporary buildings at Olavakkot	3,029 0 0	3,029 0 0	.. .. .
Rest-house at Palamalai and pipe line and furniture.	3,854 0 0	3,854 0 0	.. .. .
Olavakkot depot shed and Dhoni motor shed.	.. .. .	400 0 0	400 0 0
Total	48,999 14 2	13,304 15 0	35,694 15 2

The value of the above buildings and roads have been adjusted in 1931-32 accounts.

The Assistant Director of Commercial Audit is of opinion that the permanent roads maintained in proper order should not be depreciated and that the depreciated value standing in the books at the time should be charged to the district and value recouped to the commercial concern.

Government have passed orders that the Saw Mill machinery at Olavakkot should be sold but the disposal of the mill buildings, land and railway siding will be considered by the Chief Conservator only after the disposal of the mill.

One Holt tractor borne on the books of the division at 'Nil' value was sold for Rs. 2,500 to the Tea Estates, Limited, after a complete overhaul and reconditioning.

The Fordson tractors belonging to the Skidder have been advertised for sale by the Chief Conservator and so far no offers appear to have been received.

The telephone line was dismantled as it was of no use to the District Forest Officer, Palghat, and the materials will be disposed of if possible to the Telegraph Department.

The total cost of maintenance of the Saw Mill and Machinery during the year was Rs. 4,000 including Rs. 1,600 spent on account of overhauling the Holt tractor before its sale and Rs. 398 for insurance.

4. *Machine shop*.—This has been idle as all the other mills are also closed. Its value has been transferred from the Chenat Nair concern to the General Forest assets account to which it actually belongs.

5. *Wood workshop*.—This was closed on 31st March 1930 and in G.O. Ms. No. 194, Development, dated 11th February 1931, it has been transferred to the Industries Department and for want of funds the removal by the above department has been deferred till 1932-33.

6. *Engineering works*.—The important works done by the division during the year were:—

(1) Road and bridge construction at Nilambur.

The formation of the road was completed during the year under review. Soling and metalling is being done this year.

The construction of the first bridge at Karulai was practically completed during the year except the actual flooring, the nature of which has not yet been definitely decided upon.

The abutments and two piers of the 4-span bridge at Nedun-gayam were also taken up and work continued satisfactorily until the monsoon.

Considerable difficulty was experienced in getting down to solid rock for the foundations and a 6-inch power pump had to be purchased to keep the coffer dams free of water.

(2) *Tramline survey*.—This was completed and plans and estimates have been submitted to the Chief Conservator.

(3) *Construction of forester's quarters at Beypore*.—Total estimate Rs. 1,425. The work was completed within the year.

(4) *Investigation of alignments for roads and bridges*.—The following roads and bridge works, etc., were inspected and reports submitted:—

(i) Attapadi Block No. 6 regarding temporary extraction roads.

(ii) Proposed bridge site on the Begur-Bavali road (Wynaad).

(iii) Inspection of mechanical extraction works at Nilambur.

(iv) Inspection of Kal-Ar valley regarding possibilities of using a tractor for hauling sleepers (by Mr. Wilson).

(v) Palamalai bungalow was also inspected and report submitted regarding repairs to the roof.

7. *Portable Saw mills*.—Beypore Saw mill was ordered to be closed on 30th April 1930 in G.O. Ms. No. 958, Development, dated 7th May 1930, but was working up to 21st May 1930 for completing the railway key order. During the one month it was working, it has converted 4,861 cubic feet of logs with 3,164 cubic feet of outturn.

8. *Central stores*.—The stores were advertised for sale under orders of the Chief Conservator, but there are no offers except for a few items at considerably reduced value which have been submitted to the Chief Conservator for orders.

9. *General*.—Mr. M. S. Raghavan, Extra Assistant Conservator of Forests, was attached to this division until January 1931 and was in charge of the tramline survey.

All the executive staff with the exception of one ranger and three foresters have been transferred to other divisions.

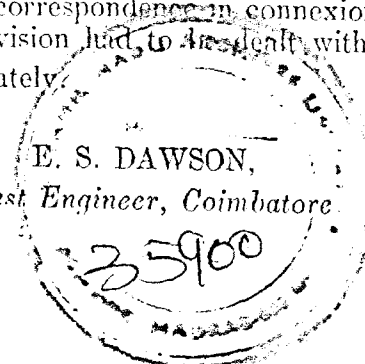
The work and conduct of the staff had been very satisfactory throughout, and the work of Mr. P. Sankunni Menon deserves special recognition in connexion with the construction of the steel girder bridges at Nilambur.

The permanent office staff which has been reduced to one accountant and one clerk had considerable difficulty in keeping up with the work as the liquidation of the Chenat Nair concern was still in progress and considerable correspondence in connexion with the Saw mills and Extraction division had to be dealt with.

Annual forms are submitted separately.

COIMBATORE,
31st August 1931.

E. S. DAWSON,
Forest Engineer, Coimbatore.



TR. 2117030