

REVIEW
OF THE
FOREST ADMINISTRATION
IN
BRITISH INDIA,
FOR THE YEAR
1882-83:

BY
W. SCHLICH, PH. D.,

INSPECTOR-GENERAL OF FORESTS TO THE GOVERNMENT OF INDIA.

SIMLA:
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INTRODUCTION.

THE most remarkable feature in Indian Forest Administration is the rapid increase of the Revenue. Five years ago it amounted to 68 lakhs of rupees, and now it has risen to 104 lakhs. This proves conclusively an increasing demand on the Government forests, which is chiefly due to the destruction of private forests, brought about by—

- (i) the extension of railway communication; and
- (ii) the increasing prosperity of the country.

Repeated efforts have been made to ascertain the area of private forests, but the data so far available are very incomplete. In the Central Provinces the private forests amount to about 35,000 square miles, while the Government forests cover an area of close on 20,000 square miles. In Bengal the zamindars hold from 40,000 to 50,000 square miles of forest lands, while the Forest Department manages 11,754 square miles. In other provinces the Government forests exceed the private forests in area; but on the whole it seems that the latter cover a larger area than the former.

2. The private forests have for a number of years past, and, it may be said, since the occupation of India by the British, which event was contemporaneous with the springing up of an increased demand, been steadily reduced by indiscriminate fellings without any regard to their reproduction. In some cases the object was to clear the ground for cultivation, and in others to satisfy an ever-increasing demand for forest produce. Where railways have been constructed the forests have rapidly disappeared, not only to make room for the march of civilization, but also to supply the large requirements of the lines. Taking into consideration the special impetus which has lately been given to the construction of additional railways, the final destruction of all private forests within a reasonable distance from them may safely be predicted. The result of this change is that the requirements for forest produce, which were formerly chiefly satisfied from private forests, must, in an ever-increasing proportion, be obtained from the Government forests. Hence the rapid increase in the Revenue.

3. This state of affairs imposes additional duties upon the Officers of the Forest Department. As long as the bulk, or, at any rate, a very large proportion, of the ordinary forest produce required per annum could be obtained from private estates, and while the Government forests were in most instances worked below their capability, a simple system of management sufficed to keep the latter estates in a fair condition; but with the increase in the demand on them, and as this approaches their maximum annual yield, the system of management must become more detailed and resources must be more carefully husbanded, or else it may hereafter be found impossible to meet the demand upon the forests.

4. Forest estates are properties requiring special and peculiar treatment, and in this respect they differ widely from land under ordinary cultivation. In the case of forests the produce of a particular year cannot, as a rule, be removed at once, but has generally to be kept for many years before it becomes fit for the special purpose for which it is wanted. The Forest Officer thus becomes trustee of considerable capital, on which he may, by overworking the forest, make inroads for a long period without the fact coming to the knowledge of the Government, or becoming even apparent to himself, unless a careful account is kept of the growing stock, and sales are duly regulated with reference to the capabilities of the forest and its powers of reproduction. As regards the latter point, special care must be taken to effect a restocking of all areas cleared for the market in the shortest time practicable. Where circumstances are favourable, this may be done in the natural way; but under unfavourable circumstances, planting and sowing must be undertaken to augment the efforts of nature, in order to prevent loss of time and a reduction of the possible yield of the forest. All these things demand that a strict control should be exercised over the working of the Government forests, and this can only be done by means of working-plans, which should be prepared, at first, for the more important areas, but eventually for all forests.

5. A working-plan deals with all points connected with the management of a forest, amongst which the following are the most important; it ascertains—

- (i) the stock on the ground at a particular time;
- (ii) the annual increase of the stock;
- (iii) the quantity of material which may be removed annually; and
- (iv) it arranges for the proper and immediate restocking of all areas cleared for the supply of the market.

The degree of accuracy required in the collection of the data for a working-plan depends chiefly upon the market value of the produce and the demands made on a particular forest. Where that demand equals, or even exceeds, the possible yield, the work must be done with the greatest minuteness, and everything must be arranged so as to obtain the highest yield which the forest is capable of returning under the most careful management. Where, on the other hand, the demand is as yet below the ordinary capability of the forest, a more rough procedure may be followed. Thus a working-plan for the greater portion of the Assam forests should, for the present, be a very simple and plain document, while those for the Darjeeling, Chakrata, Kalatope, and other similarly situated forests, must be drawn up much more minutely.

6. For years past the preparation of working-plans has been encouraged. Whenever the Inspector-General of Forests has visited a province, he has generally drawn up a scheme for the working of its forests, and a number of special working-plans have also been prepared from time to time either by the Inspector-General himself or by local officers. Then as the working of the forests gradually became more detailed, owing to increased demands, special working-plans divisions were established, first in the North-Western Provinces, after that in British Burma, and lately in the Punjab. Similar divisions are about to be formed in some of the other provinces. In this manner a skilled staff will gradually be created, whose business it is to prepare, in consultation with the local officers, the working-plans for the forests in the different provinces.

7. But something more is required, namely, that the execution of the working-plans, once approved by Government, shall be ensured, and this had best be done by a central agency. For this purpose a Superintendent of Working-Plans has been sanctioned, who will now be appointed Assistant to the Inspector-General of Forests. It will be the duty of the Inspector-General and his Assistant to visit the provinces where working-plans are under preparation or revision, to advise the officers in charge of the work regarding the general lines on which it should be conducted, and, after orders have been passed on the working-plans, to watch their execution, so as to bring any unauthorized deviation to the knowledge of the Local Government.

8. Although the importance of working the Government forests on rational principles and to the greatest advantage has made itself specially felt during the last few years, it was the knowledge that this state of things must come about which induced the Government many years ago, guided by the counsels of their late Inspector-General of Forests, to procure gradually a staff of Forest Officers skilled in the science of Forestry, as practised in those European countries where rational Forestry has been part of the general administration for a long time past. Many excellent officers joined the staff of the Department when first started, who, though untrained in forestry at the outset, have done really good work for Government, and who have become thorough administrators. Indeed, of the 15 Conservators of Forests at present controlling the forest administration in the several provinces of India, not less than 11 belong to this class of Officers, and without the administrative ability which they brought to bear upon the business, it would have been impossible to build up the Department. The preliminary part of the work, the demarcation and settlement of the forest estates, approaches, however, completion, and their management according to rational principles must now be worked out in detail. Hence the necessity for a specially skilled agency. For the professional education of the superior staff arrangements were made as early as 1866, and up to date 79 Officers trained in France and Germany have joined the Department in India. It is now contemplated to make the Department to a considerable extent independent of foreign countries, and to start a Forest School in connection with the Coopers Hill Engineering College in England.

9. An equally important subject is the training of a staff of executive Officers ordinarily called Rangers. Until quite lately the executive Officers were recruited from a variety of sources. Some entered as Forest-Guards, and by hard work and elementary study, made their way up to the rank of executive Officers; but the majority of them entered through the channel of office establishments, or they were appointed direct from elementary schools or from other employment. The difficulties of obtaining an efficient staff of these Officers were very great, and they increased year by year. Under these circumstances, the Forest School at Dehra Dun was started in 1878; it commenced by giving a practical training, but a course of theoretical instruction was added in the summer of 1881. At the outset the instruction could only be given in the English language. The students of the English class must have served for at least twelve months as Foresters, and they must have passed the Entrance Examination of an Indian University. If they pass successfully through the School, they leave with the Ranger's certificate, and they are ordinarily appointed as Rangers on return to their province. The exclusion of students who are not acquainted with English was the result of necessity at the outset, which was only to be maintained until arrangements could be matured to teach also in Hindustani. A class of the latter kind is now about to be started, but as the instruction can as yet be only of a very elementary nature, this class will be one for the training of Foresters, who, after their return from the School, can qualify for promotion to the rank of Ranger by further practical service of not less than two years. Arrangements have been made to admit to the Forest School 30 students annually, and this number will be wanted to meet the ever-increasing requirements of the Department.

10. Thus arrangements have now been matured to procure a staff which can regulate the working of the forests according to rational principles and the lessons taught by forest science, and another staff of executive Officers who can be entrusted with the actual execution of the working-plans. Both classes of Officers are essential if the Department is to fulfil its mission, and it is to be

hoped that nothing will occur to interfere with the proper and suitable training of either the one or the other.

11. On the whole, forest conservancy in India is now fairly secure. This result has not been achieved without difficulties and opposition. In most cases the people had been accustomed to roam at their pleasure over the Government forest estates and to cut where they liked and in the most improvident manner. A considerable reluctance to interfere with that state of affairs existed. But as the real necessities of the case and the interests at stake became more and more manifest to the enlightened rulers of the country, it was recognized that endeavours must be made to prevent a further destruction of the forest property of the State, by regulating the use of the forests without depriving the people of the forest produce required for their domestic arrangements. After a protracted struggle these wise counsels have prevailed, and the permanent preservation of a considerable area of forest lands has now been placed beyond doubt. Forest conservancy has been recognized as an important part of the general administration of the country, and the labours of those who have struggled for this result have not been in vain. The successors of the pioneers of the Department must now do their duty by constantly improving the management of the estates which they hold in trust, and thus render them an everlasting and increasing benefit to the general community. *To derive the greatest possible benefit from these estates with the smallest possible inconvenience to the people must be the watchword of every Forest Officer in India.*

CHAPTER I.—AREA AND BOUNDARIES.

General.

12. The Government forests, which are entirely or partially under the management of the Forest Department, comprised the following areas on the 1st April 1883 :—

PROVINCE.	AREA, IN SQUARE MILES.				REMARKS.
	Reserved Forests.	Protected Forests.	District Forests.	Total.	
Bengal	4,322	2,325	5,107	11,754	* 2,593 are first class reserves, the rest second class reserves. † 398 square miles are toungya areas.
North-Western Provinces and Oudh ...	3,339	99	118	3,556	
Punjab	1,228	311	3,155	4,694	
Central Provinces	*19,430	...	318	19,748	
British Burma	3,427	...	?	†3,427	
Assam	2,177	662	6,766	9,605	
Coorg	233	...	?	233	
Ajmere	122	...	?	122	
Biluchistan	...	...	9	9	
	34,278	3,397	15,473	53,148	
Berar	1,389	...	2,955	4,344	
Total Bengal Presidency ...	35,667	3,397	18,428	57,492	
Madras	2,782	...	?	2,782	
Bombay	9,823	5,173	?	14,996	
GRAND TOTAL ...	48,272	8,570	18,428	75,270	

This table is not yet complete; it is hoped that it will be possible to give in the next review the areas of District Forests in Burma, Coorg, Ajmere, Madras, and Bombay. By "District Forests" are understood areas wholly or partially at the disposal of Government, which have not been constituted reserved or protected forests under the Forest Law of the province in which they are situated.

13. The totals of Reserved and Protected Forests compare as follow with those of the previous year :—

YEAR.	AREA, IN SQUARE MILES.		
	Reserved.	Protected.	Total.
1882-83	48,272	8,570	56,842
1881-82	46,213	8,612	54,825
Increase in 1882-83	2,059	...	2,017
Decrease in	...	42	...

The changes which have taken place during the year are distributed among the several provinces in the following manner :—

PROVINCE.	AREA, IN SQUARE MILES.					
	Reserved Forests.		Protected Forests.		TOTAL.	
	Increase.	Decrease.	Increase.	Decrease.	Increase.	Decrease.
Bengal	86	...	...	...	86	...
North-Western Provinces and Oudh ...	13	...	1	...	14	...
Punjab	68	...	...	...	68	...
Central Provinces	...	...	...	...	...	...
British Burma	153	...	...	...	153	...
Assam	111	...	3	...	114	...
Coorg	...	1	...	...	...	1
Ajmere	...	...	...	...	...	...
Total	430	...	4	...	434	...
Berar	...	5	...	...	...	5
Total Bengal Presidency	425	...	4	...	429	...
Madras	1,600	...	...	...	1,600	...
Bombay	34	...	...	46	...	12
GRAND TOTAL	2,059	...	...	42	2,017	...

The principal increase occurred in Madras, and it is due to a re-classification of the areas hitherto under the management of the Department.

14. The Reserved Forests may, according to the Law under which they were constituted, be classified as follow :—

			Square Miles.
Under the Indian Forest Act, 1878	...	...	39,703
" " Burma " " 1881	...	...	3,427
" " Forest Act of 1865	...	...	233
" " Local Rules, Hazara	...	...	236
" " " Ajmere	...	...	122
" " " Berar	...	...	1,889
" " Leases	...	...	380
			45,490
Add Madras Reserves	...	...	2,782
Total	...	...	48,272

The Protected Forests have all been constituted under the Indian Forest Act, 1878, as none of the other Acts or Regulations recognize a second class of demarcated State forests.

Bengal.

15. The area of the forests under the management of the Department and the changes which have taken place during the year are as follow :—

CLASS OF FORESTS.	AREA, IN SQUARE MILES.			
	At the commencement of the year.	Added.	Excluded.	At the close of the year.
Reserved Forests	4,236	94	8	4,322
Protected "	2,325	.....	.....	2,325
Total	6,561	94	8	6,647
Add District Forests ... ..	.....	.....	.....	5,107
				11,754

The additions to the reserves were made in the Darjeeling District. The exclusions are due to corrections of areas and to the surrender of about 4 square miles in Palamow. Several additions to the reserves have been made since the close of the year under review, and further additions are contemplated.

The Protected Forests are situated in the Sundarbans and in Orissa. Those in the former district are not considered permanent forest estates, while the bulk of those in Orissa are now being converted into reserves.

16. The demarcation of the forests has received attention during the year. The following data show the work done :—

	Length of boundary, in miles.	Cost per mile, in rupees.
New demarcations	197	13
Clearing of old boundaries and repairing of boundary marks	583	9

or a total length of 780 miles of boundary cleared or repaired during the year. These operations are of great importance, as the protection and ultimate improvement of the forests depend to a large extent on judiciously selected and well defined boundaries.

North-Western Provinces and Oudh.

17. The forest area under the control of the Department has been increased by 8 square miles, in consequence of corrections (based on surveys) and of small additions. It stood as follows at the close of the year :—

CIRCLE.	AREA OF FOREST, IN SQUARE MILES.			
	Reserved.	Protected.	District.	Total.
Central	1,473	99	118	1,690
Oudh	1,090	.....	.....	1,090
School	776	.....	.....	776
Total in 1882-83	3,339	99	118	3,556
Total in 1881-82	3,331	99	118	3,548
Increase in 1882-83	8	.....	.....	8

The areas shown as District Forests are situated in the Banda District. Of these, 85 square miles are the property of Government, and it is proposed to acquire the remaining 33 square miles, now under Government control, as opportunity offers, the private owners interested in them receiving in the meantime a share in the net income.

The demarcation of the forests has received attention during the year, and is reported as nearly complete in all divisions.

Punjab.

18. The areas under the management of the Department and the changes made during the year are exhibited in the following statement:—

YEAR.	AREAS, IN SQUARE MILES.			
	Reserved Forests.	Protected Forests.	District Forests.	Total.
1882-83	1,228	311	3,155	4,694
1881-82	1,160	311	3,323	4,794
Increase in 1882-83	68	.....	.....	.....
Decrease „ „	.....	.....	168	100

The increase in the area of Reserved Forests is small, and no additions have been made to the Protected Forests. The subject is, however, receiving attention, and it is hoped that the definite formation of forest estates to be permanently maintained as such, will be vigorously pushed on, so as to make the full strength of the forest staff available, at an early date, for the protection, improvement, and systematic working of the forests. The decrease of 100 square miles in the total forest area is mainly due to transfers of District Forests from the charge of the Forest Department to that of the Civil Officers.

Central Provinces.

19. The changes made during the year are as follow:—

CLASS OF FORESTS.	AREA, IN SQUARE MILES.		
	At the commencement of the year.	Added or excluded.	At the close of the year.
First Class Reserves	2,588	+ 5	2,593
Second „	16,842	— 5	16,837
Total Reserves	19,430	.....	19,430
District Forests	289	+ 29	318
GRAND TOTAL	19,719	+ 29	19,748

Five square miles were transferred from the second to the first class Reserves, and the District Forests were increased by 29 square miles, chiefly in consequence of resumptions and purchases in the Balaghat District. The transfers from the second to the first class Reserves are as yet insignificant; but the

Chief Commissioner has urged more vigorous action in this matter on the Conservator of Forests.

20. The boundaries of the 1st class Reserves are in fair order, but those of the 2nd class Reserves are not in a satisfactory condition. It has now been arranged to push on demarcation, and it is hoped that the Report for 1883-84 will show considerable progress in this respect. It is essential that the work should extend to the marking off, with substantial boundary marks, of all areas inside the reserves in which cultivation may be permitted.

British Burma.

21. The Burma Forest Act recognizes only one class of demarcated State forests, which are called reserves. The progress made in the constitution of such estates will be seen from the following statement :—

	AREA, IN SQUARE MILES.		
	Forest area.	Toungya area.	Total.
Reserved on the 1st April 1882	2,876	398	3,274
Added during the year	153	.....	153
Total on the 1st April 1883	3,029	398	3,427

This area is divided as follows between the two Circles :—

CIRCLE.	AREA, IN SQUARE MILES.		
	Forest area.	Toungya area.	Total.
Pegu	2,440	398	2,838
Tenasserim	589	.....	589
Total	3,029	398	3,427

In the previous year an area of 836 square miles was added to the reserves; the small extent of additions made in 1882-83 is due to the introduction of the new Forest Act, which necessitated a change of procedure. The delay was, however, only temporary, as several extensive blocks have been gazetted since the close of the year.

22. Regarding the formation of State Reserves generally it may be noticed that the estimate of 3,474 square miles made by Mr. Brandis, the late Inspector-General of Forests to the Government of India, has now been reached; but the selection of further reserves should continue as long as valuable teak areas are available, which can be reserved without inconvenience to the people, and which are not likely to be required for the extension of cultivation, especially as the proportion of reserves to the total area of the province is as yet small. In this respect it should not be overlooked that Burma is the principal source of teak timber in the world, and that it is the duty of the Government to provide for the falling off which may, after the lapse of a limited number of years, be expected to occur in the outturn of the trans-frontier teak forests.

The formation of catch reserves has been commenced; but the area requires to be considerably increased before the permanent manufacture of catch can be regarded as placed beyond doubt. The subject is, however, one of considerable difficulty, as most of the catch areas which now remain are scattered amongst cultivated lands.

23. Fair progress seems to have been made in the demarcation of the reserves, but it has not been possible to obtain a clear idea of the state of the work, and it is hoped that the Report for 1883-84 will show in a tabular form the length in miles of boundaries actually demarcated and that remaining to be marked off on the ground.

Assam.

24. The changes which have occurred during the year are as follow :—

CLASS OF FORESTS.	AREA, IN SQUARE MILES.		
	At the commencement of the year.	Added.	At the close of the year.
Reserved Forests 	2,066	111	2,177
Protected „ 	659	3	662
District „ 	5,286	1,480	6,766
Total Forest area under the management of the Department. 	8,011	1,594	9,605

The principal additions to the reserved forests were made in the Kamrup and Naga Hills Districts, while the large additions to the district forests, due to corrections and further explorations, occurred in Goalpara, Kamrup, Nowgong, Sibsagar, and Cachar, those in the last-named district being beyond revenue limits.

Protected forests exist in four districts, namely :—

	Square miles.
Kamrup 	3
Sibsagar 	30
Lakhimpur 	459
Sylhet 	170
Total 	662

It has been decided to convert the protected forests of Sylhet into reserves—a procedure which it is proposed to apply also to most of the protected forests in Lakhimpur.

25. The present reserves have a length of 725 miles of demarcated boundaries. Of these, 403 miles were cleared and 290 miles inspected by the District Forest Officers. The latter figure does not include the boundaries inspected in Lakhimpur, for which district no return has been received. It is hoped that all boundaries will in future years be kept open. The expenditure charged during the year under the corresponding head is Rs. 7,601, so that the average cost per mile cleared would appear to be about Rs. 19. This rate will doubtless be considerably reduced when all boundaries are cleared annually, and the total expenditure under this head is therefore not likely to increase.

Coorg.

26. The area of the demarcated or Government forests has been reduced from 234 to 233 square miles in consequence of corrections. No other changes have taken place. The demarcation and survey of the ghat forests are in progress, preparatory to their being added to the Government forests; during the year under review a length of 72 miles has been cleared and surveyed. The boundaries of all the eastern forests are clear, but it appears that these areas are not demarcated by boundary pillars. It has been suggested that

the erection of such pillars should receive attention at an early date, especially where the forests adjoin private lands.

Ajmera

27. No change took place in the area of the reserves, which remains at 122 square miles. The formation of further reserves is, however, under consideration, and it is expected that the area will, for the present, be increased to 156 square miles. Some further additions may become feasible during the impending Settlement.

The boundaries are reported to be in good order, except that the pillars require re-numbering, which work it is proposed to do during the season of 1883-84.

Berar.

28. The changes in the forest areas made during the year are as follow :—

CLASS OF FOREST.	AREA OF FORESTS, IN SQUARE MILES.			
	At the commencement of the year.	At the close of the year.	Increase.	Decrease.
State Reserves	1,086	1,106	20	...
District „	308	283	...	25
Unreserved Forests	3,030	2,955	...	75
Total	4,424	4,344	...	80

The changes under reserved forests are principally due to the transfer of the Amdari forest from District to State reserves, and those in the unreserved forests to fluctuations in the area under cultivation. The new classification of the areas is still proceeding. The reserves constituted up to date have all been demarcated.

Madras.

29. The area of reserves existing in Madras is stated to be 2,782 square miles, and it comprises the forests which have hitherto been considered as under the more special management of the Department. Owing to the passing of the Madras Forest Act, No. V. of 1882, an entirely new classification must be made, so that the areas recorded as reserves will, for some years to come, undergo considerable changes.

Bombay.

30. The changes which occurred during the year in the areas under the control of the Forest Department are as follow :—

CLASS OF FORESTS.	AREA, IN SQUARE MILES.			
	At the commencement of the year.	Added.	Excluded.	At the close of the year.
Reserved Forests	9,797	229	203	9,823
Protected „	5,219	80	126	5,173
Total	15,016	309	329	14,996

The areas remaining at the close of the year were distributed over the three Circles in the following manner :—

CIRCLES.	AREA, IN SQUARE MILES.		
	Reserved Forests.	Protected Forests.	Total.
Northern	7,580	1,832	9,412
Southern	1,638	3,341	4,979
Sind	605	.....	605
Total	9,823	5,173	14,996

31. The work of demarcation and settlement has been continued. At the close of the year 3,183 square miles had been finally disposed of in the Northern Circle and 1,538 square miles in the Southern Circle. No further enquiries appear to be necessary in the old Sind reserves, so that the total area finally disposed of amounts to 5,326 square miles. Considerable progress has been made in a large portion of the remaining areas already declared reserved and protected forests, and in areas which it is proposed to add to either one or the other of these classes of forests; but as the task is of a laborious nature, it is likely to require a few years more to complete it.

Leased Forests.

32. The area of leased forests included amongst reserves has, owing to corrections, been reduced from 402 to 380 square miles. The payments made during the year, including payments to shareholders in forests managed by Government, were as follow :—

	Ra.
North-Western Provinces and Oudh	12,826
Punjab	36,740
Central Provinces	251
Berar	17,120
Total Bengal Presidency	66,937
Madras	10,835
Bombay	16,158
GRAND TOTAL	93,930

Cost of Demarcation.

33. The outlay on account of the demarcation of the forests was as follows :—

	Ra.
In the Bengal Presidency	61,318
„ Madras „	6,667
„ Bombay „	6,996
Total	74,981

Compensation for Land and Rights.

34. The undermentioned amounts were paid during the year under this head :—

	Ra.
Bengal Presidency	20,100
Madras „	12,488
Bombay „	12,930
Total	45,518

CHAPTER II.—SURVEYS AND WORKING-PLANS.

Surveys.

35. The operations of the Forest Survey Branch extended during the year over parts of Kumaun and Garhwal, Tehri-Garhwal, Jaunsar, and Berar, while a number of boundary pillars were surveyed and boundaries laid down in Dehra Dun and in Saharanpur. Only 75 square miles remained at the close of the year to be surveyed in Kumaun and Garhwal, so that the main body of the Branch will, for some years to come, be employed on the survey of the Melghat Taluk in Berar.

36. The outturn of work during the year comprises an area of 361 square miles plane-tabled on the scale of $4'' = 1$ mile, against 265 square miles in the previous year. This favourable result is said to be chiefly due to an exceptionally healthy season. The area triangulated was 85 square miles. Eight sheets of the Kumaun and Garhwal survey were published, and one had gone to press at the close of the year. The cost per square mile estimated on the total area plane-tabled came to Rs. 94, against Rs. 104 in the preceding year; and the total cost of the Kumaun and Garhwal survey has been reduced from Rs. 116 to Rs. 112 per square mile. The total cost of the Jaunsar and Tons survey up to date is Rs. 186 per square mile, and this comparatively high rate is said to be due to some extent to the inclusion of a considerable amount of boundary and road survey work, against which no area can be shown.

37. The progress of the forest survey in British Burma, conducted by the General Survey Department of India, has so far not been satisfactory, owing to the exceptional difficulties which were met with at the commencement of the operations. It has now been decided to survey the forests on a modified 4-inch scale, which will enable the survey party to turn out about 300 square miles annually at a cost of Rs. 135 per square mile debitable to the Forest Department.

38. The General Survey Department is also surveying the Thana District in Bombay on a scale of $4'' = 1$ mile. During the year 1881-82 an area of 940 square miles was topographically surveyed in Thana, at a cost of Rs. 53 per square mile, of which Rs. 20 are debited to the Forest Department. In 1882-83 an additional area of 665 square miles was surveyed. Another party has surveyed the whole of the Dangs, with the exception of Ketak Karupara, which is surrounded by Gaikwari territory. The work of mapping is in progress.

Working-Plans.

39. At the close of the year provincial working-plans divisions had been started in the North-Western Provinces and in British Burma. Since then a similar division has been established in the Punjab, and one is contemplated in Bengal. The subject of working-plans is of the utmost importance, and considerable changes in the organization of the work are about to be initiated, which will be recorded in the next Review. In the meantime the work is progressing in the above-mentioned provinces.

CHAPTER III.—PROTECTION AND IMPROVEMENT.

1.—GENERAL PROTECTION.

40. In the Reviews of past years the numbers of persons prosecuted for breaches of the Forest Law have generally been given. Of late years, however, a very large proportion of such breaches have been compounded under the

Forest Law; hence a somewhat different classification must now be introduced. The cases which occurred during the year were as follow :—

PROVINCE.	NUMBER OF NEW CASES DURING THE YEAR.			Proportion of convictions to total number of cases decided by the Courts.
	Taken into Court.	Compounded.	Total.	
Bengal...	134	1,069	1,203	70
North-Western Provinces and Oudh	141	436	577	84
Punjab...	903	P	P	75
Central Provinces	635	8,921	9,556	87
British Burma	120	P	P	83
Assam...	50	P	P	75
Coorg...	13	...	13	91
Ajmere...	62	...	62	87
Biluchistan	10	...	10	70
Total	2,068	.....	.....	80
Berar ...	437	.....	437	86
Total Bengal Presidency	2,505	.....	.....	81
Madras...	746	.....	746	83
Bombay	1,979	P	P	73
GRAND TOTAL	5,230	.....	.....	78

As the numbers of cases compounded have not been given for all provinces, it is difficult to criticise the figures with any advantage. It is hoped that the Reports for 1883-84 will be complete in this respect.

41. The percentage of convictions obtained in the regular courts, amounting to 78 per cent. of the cases decided, is satisfactory. The number of cases taken into court in the Bengal Presidency is considerably lower than in the preceding year.

Bengal.

42. The total number of cases is distributed as follows amongst the divisions :—

DIVISIONS.	NUMBER OF CASES		
	Taken into Court.	Compounded.	Total.
Sundarbans	30	950	980
Teesta ...	6	82	88
Darjeeling	19	37	56
Orissa (Koordah)	55	...	55
Kurseong	10	...	10
Chittagong	7	...	7
Jalpaiguri	5	...	5
Buxa ...	1	...	1
Chota Nagpore	1	...	1
Total	134	1,069	1,203

The bulk of the offences occurred in the Sundarbans, and next come the two hill divisions of Teesta and Darjeeling, then Koordah in Orissa. The cases

in the other divisions are very few. On the whole, about one offence for every ten square miles of forest under the management of the Department has been recorded, which must be considered very moderate.

North-Western Provinces and Oudh.

43. The cases of breaches of the forest rules which occurred during the year were distributed among the three circles as follow :—

CIRCLE.						NUMBER OF CASES		
						Taken into Court.	Compounded	Total.
Central	...	...	...	...	...	60	386	446
Oudh	...	...	...	...	...	63	3	66
School	...	...	...	...	...	18	47	65
Total						141	436	577

The total number of cases during the year under review represents one offence for every six square miles of forest under the control of the Department. The great majority of the cases are reported to have been of a petty nature.

Punjab.

44. The number of prosecutions on account of the breaches of the forest rules rose from 710 in the previous year to 903 in the year under review; but as the numbers of cases compounded by Forest Officers in these years have not been given, it is impossible to draw any conclusions from the above figures.

Central Provinces.

45. The breaches of the forest rules brought to notice during the year are as follow :—

CLASS OF RESERVES.						NUMBER OF CASES		
						Taken into Court.	Compounded.	Total
First Class Reserves	...	...	...	...	...	30	467	497
Second "	...	...	...	...	...	605	8,454	9,059
Total in 1882-83						635	8,921	9,556
Total in 1881-82						800	8,428	9,228
Increase in 1882-83	...	...	...	...	...	.....	493	328
Decrease " "	...	...	...	...	...	165	.....	.....

A less number of cases was taken into court, but more were compounded, while the total number shows a slight increase, which appears to be due to the submission of more complete returns than in the previous year. On the whole, one forest offence has been committed in every two square miles of forest under the control of the Department. The results of forest protection during the year are considered satisfactory.

British Burma.

46. Only 120 cases of breaches of the forest rules were taken into court, which, considering the forest area, is a very small number.

Assam.

47. During the year under review 50 cases of breaches of the forest rules were taken into court, as compared with 37 in the previous year. The number of cases compounded under section 67 of the Forest Act has not been given. On the whole, forest offences in Assam are few in number, as the people

can draw all their ordinary requirements without payment from the District Forests. Of illicit grazing only one case occurred, while the 28 cases of unauthorized felling of trees refer mostly to timber cut for export.

Coorg.

48. The number of prosecutions for breaches of the forest rules amounted to 13, against 20 in the previous year. In ten cases convictions were obtained, one was dismissed, and two are pending. Forest offences are comparatively few in number, which is due to the fact that the people of Coorg are most liberally treated in the matter of timber and other forest produce necessary for their domestic requirements.

Ajmere.

49. The cases of breaches of the forest rules which occurred during the year numbered 62 as compared with 102 in 1881-82, while 3,736 head of cattle were impounded as against 5,815 in the previous year. The improvement in these respects is satisfactory, and is said to be due to the fact that the zamindars were sufficiently supplied with grass and wood for their actual requirements, thus obviating the necessity for their appropriating those articles in an unauthorized way.

Berar.

50. The number of prosecutions for breaches of the forest rules has increased from 369 in 1881-82 to 437 in 1882-83; but no importance is attached to this fact by the local officers, as fluctuations in this respect are always likely to occur.

2.—PROTECTION FROM FIRE.

General.

51. The subjoined table gives the areas under fire protection and the results of the year's operations:—

PROVINCE.	AREA, IN SQUARE MILES.		Percentage of failures to area attempted.	Cost		Year when fire conservation commenced.	Proportion of area under fire protection to total area of reserves, in per cent.
	Attempted.	Actually protected.		Per square mile protected.	Per acre protected.		
				Rs.	Pies.		
Bengal ...	667	606	9	19	6	1872	15
North-Western Provinces and Oudh ...	937	920	2	38	11	1869	28
Punjab ...	29	25	14	20	6	1872	2
Central Provinces ...	1,426	1,390	3	11	3	1864	7*
British Burma ...	211	180	15	70	21	1857	6†
Assam ...	207	153	26	58	17	1873	10
Coorg ...	193	193	NIL.	13	4	1876	83
Ajmere ...	123	122	NIL.	5	1½	1874	100
Total ...	3,792	3,589	5	24	7	.....	11
Berar ...	1,034	973	6	5	1½	1870	74
Total Bengal Presidency	4,826	4,562	5	20	6	.....	14
Madras ...	609	569	7	18	5	1867	22
Bombay ...	.	.	Data incomplete.				

* This refers to the 1st and 2nd class reserves. The percentage of the 1st class reserves under fire protection amounts to 55.

† Exclusive of Toungya areas the percentage amounts to 7.

The above table shows that 14 per cent. of the area of Reserves in the Bengal Presidency are under fire protection ; but if the second class reserves in the Central Provinces be omitted, the percentage is raised to 25 per cent., or one-fourth of the whole area. These data show that, although many areas are not in need of special measures, the work of fire protection must gradually increase ; but it is essential that this should not be done at a faster rate than is compatible with the safety of the areas already under protection.

The Central Provinces show the largest area under protection, and next come Berar, the North-Western Provinces and Oudh, Bengal, and Madras.

Protection has been most successful during the year under review in Ajmere, Coorg, the North-Western Provinces and Oudh, and the Central Provinces, and least successful in Assam, British Burma, and the Punjab.

The cost per square mile has been highest in Burma, Assam, and the North-Western Provinces and Oudh, and lowest in Berar, Ajmere, and the Central Provinces.

52. The total results during the last five years in the Bengal Presidency are as follow :—

YEAR.	AREA, IN SQUARE MILES.		Percentage of failures to area attempted.
	Attempted.	*Actually protected.	
1878-79 	3,474	2,938	15
1879-80 	4,072	3,709	9
1880-81 	4,465	4,194	6
1881-82 	4,897	4,283	13
1882-83 	4,826	4,562	5
Average ...	.....	.....	9

The average failures during the last five years amounted to 9 per cent. of the area under protection, which shows an improvement of 3 per cent. as compared with the quinquennial average shown last year.

Bengal.

53. The percentage of failures to area attempted has increased from 7 to 9 per cent. The most important failures occurred in the Jalpaiguri and Buxa divisions. In the former division 47 square miles out of a total of 154 square miles attempted were burnt, and in the latter 11 out of 165 square miles. One of the fires in Buxa was due to neglect on the part of the Ranger in temporary charge, and the other was caused by travellers, who attempted to drive away by such means a herd of wild elephants. The origin of most of the fires which occurred in the Jalpaiguri Division has not been satisfactorily explained, and it seems that the arrangements made for protection against fire are capable of improvement. It is acknowledged, however, that the season was, on the whole, unfavourable for fire protection. The success obtained in the Kurseong and Palamow divisions is satisfactory, and it is hoped that it will continue. The detailed arrangements which have been made in several divisions for camping grounds will assist in the prevention of fires, and it is hoped that the system will, at an early date, be extended to all forests which are liable to damage by fire.

North-Western Provinces and Oudh.

54. The results of fire protection in the several circles are as follow :—

CIRCLE.	AREA, IN SQUARE MILES.		Proportion of failures to area attempted, in per cent.	COST OF AREA SUCCESSFULLY PROTECTED.	
	Attempted.	Failures.		Per square mile, in rupees.	Per acre, in pies.
Central	414	9	2	45	13
Oudh	288	3	1	32	9
School	235	5	2	33	10
Total in 1882-83...	937	17	2	38	11
Total in 1881-82...	908	87	10	40	12
Increase in 1882-83*	29	...	...	...	...
Decrease „ „	...	70	8	2	1

On the whole, the results obtained in the year under review are much more favourable than those of 1881-82, though 58 fires occurred which burnt 17 square miles. Many of the fires were due to carelessness on the part of the establishments employed on line-burning. It will probably be difficult to eliminate this source of danger until a superior class of executive subordinates has been secured, who can be made responsible for such work in their respective ranges. Fires caused by travellers might be avoided or be reduced in number by the establishment of fixed camping or resting grounds at suitable distances along the frequented roads within the fire-protected areas.

Punjab.

55. Most of the forests can be protected against fire without special measures. A considerable increase has, however, taken place in the area overrun by fires. Though the total area burnt, 48 square miles, is as yet comparatively small, it is satisfactory to notice that vigorous steps are contemplated to meet the difficulty in time before the evil assumes larger dimensions.

Central Provinces.

56. The areas under fire protection were practically the same as those in the previous year, and the results are as follow :—

CLASS OF FORESTS.	AREA, IN SQUARE MILES.			COST PER AREA SUCCESSFULLY PROTECTED.	
	Attempted.	Failures.	Proportion of failures to area attempted, in per cent.	Per square mile, in rupees.	Per acre, in pies.
First Class Reserves	1,356	23	2	11	3
Second „	70	14	20	15	5
Total in 1882-83	1,426	36	3	11	3
Total in 1881-82	1,426	204	14	11	3

These data show that the results were much more favourable in 1882-83 than in the preceding year, while the cost per acre successfully protected was the same. On the whole, the results are very satisfactory, and it is hoped that the improvement effected during the year will be lasting.

British Burma.

57. The cost of fire protection, Rs. 70 per square mile, is very high, and the success is only moderate; moreover, the area burnt includes 228 acres of plantations. On the whole, fire protection is as yet backward in Burma, the area under protection being only 211 square miles out of a total area of forest reserves, amounting to 3,029 square miles, exclusive of toungya areas. It is hoped that this branch of forest work will receive special attention when the formation of reserves has been completed.

Assam.

58. The results of fire protection during the year, compared with those of former years, are as follow :—

YEAR.	AREA, IN SQUARE MILES.		Proportion of failures to area attempted, in per cent.
	Attempted.	Failures.	
1879-80	145	1	1
1880-81	163	2	1
1881-82	164	66	41
1882-23	207	54	26
	Average	...	17

These data show that the success attained during the last two years was very partial. During both years the chief failures occurred in Goalpara. The season of 1882-83 is described as unfavourable.

Coorg.

59. The results of fire protection were very satisfactory, the area burnt being only 16 acres out of 193 square miles attempted. This is a great improvement on the results of 1881-82, when as much as 62 per cent. of the area attempted was burnt. The favourable results of the year under review are said to be due to an exceptionally wet monsoon and to seasonable showers of rain which fell early in spring. It appears, however, that the general arrangements for the protection of the areas were more complete than those of the previous year.

Ajmere.

60. The whole area of reserves, 122 square miles, was under protection, and only 13 acres were burnt. Almost complete success has now been obtained for some years past.

Berar.

61. The following table exhibits the results of fire protection during the last three years :—

YEAR.	AREA, IN SQUARE MILES.		
	Attempted.	Failures.	Proportion of failures to area attempted, in per cent.
1880-81	882	14	2
1881-82	936	72	8
1882-83	1,034	61	6

Although the results are on the whole satisfactory, it is noticed that numerous fires have again occurred in connection with the burning of the fire lines. It is hoped that the accidents caused in this manner will in future years be reduced to a minimum by a more strict supervision of the establishment employed on the work of line-burning.

Madras.

63. A fair commencement has been made to protect some of the more important forests from fire, as indicated in the following statement:—

CIRCLE.	AREA, IN SQUARE MILES.		Proportion of failures to area attempted, in per cent.	COST OF AREA SUCCESSFULLY PROTECTED.	
	Attempted.	Failures.		Per square mile, in rupees.	Per acre, in pica.
Northern	282	39	14	22	7
Southern	327	1	0.3	15	4
Total	609	40	7	18	5

Continued and successful fire protection in the principal catchment areas of the Madras rivers is of such importance that this branch of forest work will, no doubt, receive special attention as soon as the progress in the demarcation and settlement of reserves permits of this being done.

Bombay.

63. The returns of fire protection in Bombay are incomplete. It is hoped that future reports will give an accurate account of this branch of forest work.

3.—REPRODUCTION OF THE FORESTS.

General.

64. Owing to the vast extent of the Indian forests and the high cost of artificial operations, the natural system of reproduction must be chiefly relied on; that is to say, the forests must be properly protected, fires kept out, and, whenever necessary, certain areas must be closed against grazing, either altogether or for certain seasons of the year, until the young growth in the areas under reproduction is no longer liable to be injured by cattle. In many instances, however, natural reproduction will have to be assisted by sowing and planting, if the duration of reproduction is not to be indefinitely prolonged. Where seed trees are wanting, and where the introduction of new species is desired, artificial reproduction must, under any circumstances, be resorted to. Under these circumstances, it will always be difficult to classify the reproductive works. An attempt should, however, be made in future Annual Reports to do this in as satisfactory a manner as the circumstances of each province will permit.

65. The remarks on natural reproduction recorded in the reports for 1882-83 are, as a rule, of too general a description to be of much use. In future reports this subject might usefully be dealt with in detail, by recording the progress made in each closed block. Closing against grazing and fire conservancy are expensive and often necessitate the enforcement of restrictions on the people, and it is essential that the results of these measures should be ascertained

and recorded in detail, to enable the Government to judge how far they have led to results which are commensurate with the means adopted, and how far artificial reproduction is necessary in each case where natural means have failed, or are unlikely to accomplish the re-stocking of the areas under reproduction within a reasonable time.

66. The area of plantations may be seen from the following table:—

PROVINCE.	AREA, IN ACRES.			
	At the commencement of the year.	Added during the year.	Excluded during the year.	At the close of the year.
Bengal	2,005	434	.....	2,439
North-Western Provinces and Oudh	3,330	281	.....	3,611
Punjab	16,201	188	.....	16,389
Central Provinces	Not given.	.....	.....	.....
British Burma	10,100	1,121	.....	11,221
Assam	1,151	111	.....	1,262
Coorg	437	152	.....	589
Ajmere	413	.....	58	355
Biluchistan	13	8	.....	21
Total	33,650	2,237	.....	35,887
Berar	1,409	901	.....	2,310
Total Bengal Presidency	35,059	3,138	.....	38,197
Madras ... ..	.....	.....	.....	62,949
Bombay	Not given.	.....	.....	.....
GRAND TOTAL ... ..	.....	.....	.....	101,146

It was the practice in former years to give the expenditure incurred on plantations, but some of the areas have already yielded large returns, the value of which cannot be gathered from the provincial reports. Under these circumstances, it would be misleading to give the expenditure only, and the column in question will be omitted until it is possible to give also the receipts.

67. The largest amount of actual plantation work has been done in Madras and next in the Punjab, while the *toungya* teak plantations in Burma are now being so rapidly extended that the total area planted in that province is likely to surpass, at an early date, the area of plantations in the Punjab. In Bombay a great deal of sowing is done to assist natural reproduction, but these operations cannot be shown in the above table.

Bengal.

68. The information given in the report regarding natural reproduction is scanty, but it is satisfactory to notice that the Conservator and his staff take, on the whole, a hopeful view of the matter. The results of artificial reproduction are as follow:—

	AREA, IN ACRES.		
	At the commencement of the year.	Added during the year.	At the close of the year.
Regular plantations	1,215	164	1,379
Other cultural operations	790	270	1,060
Total for 1882-83	2,005	434	2,439
Total for 1881-82	1,207	798	2,005

The extensions made during the year comprise 96 acres of upper hill forest and 40 acres of bamboos for the supply of the station of Darjeeling, 69 acres in Kurseong, 207 acres in Buxa, and 22 acres in Chittagong. Except in the latter division, the planting was all successful, which is said to be chiefly due to the fact that it is done in lines, while the intermediate jungle is left intact, and thus renders a certain amount of protection to the young plants. The partial failure in Chittagong was due to an unfavourable monsoon.

North-Western Provinces and Oudh.

69. The progress made during the year under review in artificial reproduction is as follows:—

CIRCLE.	AREAS PLANTED, IN ACRES.		
	At the beginning of the year.	Added during the year.	At the close of the year.
Central	1,178	16	1,194
Oudh	791	181	972
School	1,361	84	1,445
Total	3,330	281	3,611

Much detailed information on this subject is given in the reports. The most important operations are the rearing of deodar in the School Circle, of sissu in Oudh, and of fruit and hill timber trees in the Central Circle.

Punjab.

70. The areas dealt with artificially, compared with the corresponding figures of the previous year, are as follow:—

YEAR.	AREAS PLANTED, IN ACRES.		
	Regular plantations.	Other cultural operations.	Total.
1882-83	15,324	1,065	16,389
1881-82	15,448	753	16,201
Increase in 1882-83 ... ..	.....	312	188
Decrease „ „	124	.....	.....

The decrease under regular plantations is due to fellings and to the action of floods.

The successful rearing of deodar in Kulu and the efforts made to restock the Pabbi Reserve under very adverse conditions have been specially noticed.

British Burma.

71. The following table exhibits the progress made in planting operations during the year:—

	AREA PLANTED, IN ACRES.			COST, IN RUPEES.	
	At the commencement of the year.	Added during the year.	Total.	Total from the commencement.	Per acre.
Regular plantations	3,564	21	3,585	3,24,001	90
Successful toungya plantations	3,896	651	4,537	42,346	9
Indifferently stocked toungya plantations and other cultural operations.	2,650	449	3,099	24,853	8
Total	10,100	1,121	11,221	3,91,200	35

Owing to a re-classification of the areas since last year, the entries in the first column, do not agree with those shown at the close of 1881-82. The additions made during the year, though considerable, are less than those of the previous year. It is noticed that a commencement has been made to reproduce cutch in toungyas, and that the sowing with teak of areas on which the bamboos had died has proved a success. It is hoped that planting operations in the Tenasserim Circle will soon prove as successful as those in the Pegu Circle.

Assam.

72. No mention is made in the Report of natural reproduction. The progress made in planting is as follows :—

	AREA PLANTED, IN ACRES.			COST, IN RUPEES.	
	In previous years.	During the year 1882-83.	Total.	Total.	Per Acre.
Regular plantations ...	1,113	89	1,202	96,581	81
Other cultural operations ...	38	23	60	3,751	63
Total ...	1,151	111	1,262	100,332	80

The additions consist of 90 acres of rubber plantations in the Darrang District and of 22 acres of ajhar and nahor plantations in the Nambor Forest (Sibsagar Division), while 1 acre of cinchona plantation in the Khasi and Jaintia Hills was struck off. The planting operations are reported as successful. Arranged according to species, the areas stand thus :—

	Acres.
Caoutchouc plantations ...	1,002
Teak " ...	170
Other " ...	30
Sowings of Nahor and Ajhar ...	60
Total ...	1,262

73. In the orders of the Government of India on the report for 1880-81, further extensions of the Charduar rubber plantation in the Darrang and Nowgong Division were suggested, and it is satisfactory to notice that an extension of 100 acres during each of the next two years has been sanctioned by the Chief Commissioner. Considering that the Department has now mastered the art of planting the *Ficus elastica*, and that the estimated cost per acre is put down at Rs. 29 only, it is advisable that these plantings should be conducted on a somewhat larger scale than 100 acres per annum. Under any circumstances, the work should be steadily continued for a number of years to come, and it may be worth while to make some further experiments in growing the rubber plant as an epiphyte. The present rubber plantations are on low land, and it appears advisable to make some of the extensions on somewhat higher ground, so as to ascertain in which locality the yield is greatest.

Coorg.

74. The progress made in planting operations will be seen from the following statement :—

	AREA PLANTED, IN ACRES.		
	At the beginning of the year.	Added.	Total.
Teak plantations ...	218	55	273
Sandalwood " ...	114	57	171
Fuel " ...	45	30	75
Total ...	407	142	549
Other cultural operations ...	30	10	40
GRAND TOTAL ...	437	152	589

In the year 1881-82 the planting was not successful, chiefly owing to a scanty rainfall. During the year under review, on the other hand, the operations suffered from an abnormally heavy monsoon, which caused several nurseries to be flooded, resulting in a scarcity of seedlings for transplanting. On the whole, however, the additions are of fair extent, and the greater part of them are reported to be fully stocked..

Ajmere.

75. It has not been shown in the Report what progress the natural reproduction of the forests has made. Small areas cut over in previous years have, on the whole, been fairly well restocked by coppice shoots. No new plantations were made during the year, but 58 acres were struck off the returns as failures, the area (including nurseries) which now remains amounting to 355 acres. About 56 maunds of various seeds were sown during the year, but the results were not satisfactory, as the seeds did not in all instances germinate, and many of the seedlings which came up were damaged by winter frost and summer heat.

Berar.

76. The cultural operations have extended over 901 acres, which have been sown with the seed of various trees in ploughed strips, 3 feet wide and 15 feet apart, the intervening spaces being also sown broadcast. In addition, 8,000 pounds of teak seed were sown broadcast in the Gugamal Reserve. It will be interesting to learn the results of this rough method of propagating teak, as similar experiments made in the forests of the Central Provinces have not led to satisfactory results.

Madras.

77. In plantation work considerable progress had been made in past years, and it is understood that the following areas were stocked at the close of 1882-83:—

	Acres.		
In the Northern Circle	...	...	19,212
Southern „	...	...	43,737
Total	...	...	62,949

This area is much larger than that planted in any other province of British India. Some of the plantations, as, for instance, the Nilambur Teak Plantations and others, have already yielded large returns. The Conservator of Forests of the Southern Circle has attempted to show the regular plantations separately from other cultural operations, and the Conservator of the Northern Circle has separately recorded the topes. It would be an advantage if a uniform classification for both Circles was attempted in the Reports for 1883-84.

Bombay.

78. The data contained in the Reports of the three Circles of the Bombay Presidency are wanting in precision. Very extensive broadcast sowings are made annually, especially in the Northern Circle, with fair results. The systems of dibbling, pitting, and sowing on ploughed land have also been found successful. Regular planting works were executed, but, in the absence of tables showing the areas stocked, it is not possible to detail the results.

4.—COMMUNICATIONS AND BUILDINGS.

79. The outlay under this head during the year is as follows :—

PROVINCE.				Roads and bridges.	Buildings.	Other works.	Total.
				Rs.	Rs.	Rs.	Rs.
Bengal	...	...	...	9,506	10,045	53	19,604
North-Western Provinces and Oudh	...	...	...	57,152	45,514	3,516	1,06,182
Punjab	...	...	...	5,488	9,519	150	15,157
Central Provinces	...	...	...	563	1,588	849	3,000
British Burma	...	...	...	1,321	17,369	8,411	27,121
Assam	...	...	...	3,926	13,287	60	17,273
Coorg	...	...	...	839	499	.....	1,338
Ajmere	...	...	...	.....	610	.....	610
Biluchistan	...	...	...	.....	.....	.....	.....
Forest Survey	...	...	...	.....	.....	.....	.....
Total				78,795	98,451	13,039	1,90,285
Benar	...	...	...	7,438	1,150	193	8,781
Total Bengal Presidency				86,233	99,601	13,232	1,99,066
Madras	...	...	...	1,332	4,166	447	5,945
Bombay	...	...	...	22,053	9,367	651	32,071
GRAND TOTAL				1,09,618	1,13,134	14,330	2,37,082

80. The totals for the Bengal Presidency compare as follow with those of the four previous years :—

	Rs.
1878-79	1,21,822
1879-80	1,66,193
1880-81	1,38,324
1881-82	1,88,027
1882-83	1,99,066

Average per annum ... 1,62,686

The expenditure under these heads has risen considerably of late years. In the North-Western Provinces and Oudh more than a lakh of rupees has been expended during the year under review, of which Rs. 45,514 are debited under Buildings. Rest-houses are essential, but the construction of expensive houses in the middle of the forests should not be overdone. Ordinarily one comfortable house, if necessary double storied, in each charge would be required as forest head-quarters; the others should be structures of a simple and inexpensive description.

5.—SUMMARY OF EXPENDITURE ON DEMARCATION AND IMPROVEMENT OF FORESTS.

81. The expenditure under these heads during the year is as follows :—

PROVINCE.	Demarcation.	Compensation for land and rights.	Surveys and working-plans.	Plantations.	Protection from fire.	Other works.	Total.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Bengal	7,793	16,220	144	11,045	12,524	1,062	48,788
North-Western Provinces and Oudh... ..	9,269	155	1,630	12,081	34,093	7,937	65,165
Punjab	22,118	607	44	27,809	689	1,618	52,885
Central Provinces	2,427	650	1,848	632	13,816	4,271	23,644
British Burma	9,362	956	6,709	27,268	11,209	163	55,667
Assam	7,601	1,012	4,322	10,657	8,707	7,463	39,762
Coorg	1,318	235	687	13,468	2,544	1	18,253
Ajmere	6	...	1	1,757	575	395	2,734
Biluchistan	190	...	...	90	...	...	280
Forest Survey	...	...	6,425	...	...	...	6,425
Total...	60,084	19,835	21,810	1,04,807	84,157	22,910	3,13,603
Berar	1,234	265	5,389	997	5,124	1,092	14,101
Total Bengal Presidency...	61,318	20,100	27,199	1,05,804	89,281	24,002	3,27,704
Madras	6,667	12,488	578	79,583	9,856	53,812	1,62,984
Bombay	6,996	12,930	28,836	14,586	2,348	1,67,896	2,33,592
GRAND TOTAL...	74,981	45,518	56,613	1,99,973	1,01,485	2,45,710	7,24,280

82. The following data show the expenditure in the Bengal Presidency compared with the four previous years :—

	Rs.
1878-79	2,98,962
1879-80	2,55,647
1880-81	2,66,925
1881-82	3,22,449
1882-83	3,27,704

The increase which has taken place since 1878-79 is very moderate.

CHAPTER IV.—YIELD AND FINANCIAL RESULTS.

General.

83. The details of the financial results are exhibited in Statements I, II, and III appended to this Review.

The receipts and surplus of the various provinces during the year under review, arranged according to the total amount of revenue, are as follow :—

No.	PROVINCE.	Total Revenue.	Surplus.	Deficit.	Proportion of Surplus to gross Revenue, in percent.
		Rs.	Rs.	Rs.	
1	British Burma	25,03,894	12,74,935	...	51
2	Bombay	20,90,353	8,32,594	...	40
3	North-Western Provinces and Oudh	10,13,403	1,74,378	...	17
4	Central Provinces	9,77,647	5,65,399	...	58
5	Madras	9,06,442	2,61,577	...	29
6	Punjab	7,66,710	2,05,959	...	27
7	Bengal	6,93,959	3,11,775	...	45
8	Berar	2,87,043	1,37,011	...	48
9	Assam	2,48,605	76,782	...	31
10	Coorg	1,38,022	73,240	...	53
11	Ajmere	7,126	...	4,158	...
12	Biluchistan	5,039	...	6,922	...
13	Forest Survey	348	...	41,247	...
	Total ...	96,33,591	38,61,323	...	40

84. Burma still stands first as regards gross revenue and surplus; indeed, there has been, owing to the favourable prices obtained for teak, a further considerable improvement in both, as compared with the previous year, the receipts having increased by about three lakhs and the surplus by two lakhs. In Bombay also a considerable improvement has taken place, owing to an enhanced demand for produce, while smaller advancements have been effected in the Punjab, Bengal, Assam, and Berar. Madras, which stood seventh on the list for 1881-82, has now advanced to the fifth place, chiefly owing to the amalgamation of the Jungle Conservancy with the Forest Department. In the Central Provinces a considerable falling off has occurred, which is due to reductions in the departmental operations. The changes in the North-Western Provinces and Oudh are small, the receipts being slightly lower and the surplus somewhat higher than in the previous year.

85. The total forest revenue in the year under review amounted to 96 lakhs of rupees. According to the latest figures for the year 1883-84, the receipts have risen to 104 lakhs, which is a further increase of 8 lakhs as compared with 1882-83.

The proportion of the surplus to the gross receipts in 1882-83 is 40 per cent., as compared with 37 per cent. in the year 1881-82.

86. The surplus revenue has shown a steady increase during the last five years, as may be seen from the following figures:—

YEAR.	BRITISH TERRITORY.				Berar.	Grand Total.
	Bengal Presidency.	Madras.	Bombay.	Total.		
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
1878-79	12,29,983	41,890	1,82,733	14,54,606	1,78,320	16,32,926
1879-80	15,96,541	Def. 15,478	4,08,309	20,49,462	1,90,987	22,40,449
1880-81	18,27,886	1,40,835	4,07,711	23,85,383	1,37,587	25,22,969
1881-82	23,08,254	1,15,524	6,79,631	31,03,409	80,526	31,83,935
1882-83	26,30,141	2,61,577	6,33,594	37,24,312	1,37,011	38,61,323

Bengal.

87. The yield of the reserved forests during the year in timber and fuel is as follows:—

	QUANTITIES REMOVED, IN CUBIC FEET (SOLID).				
	Timber.	Fuel.	Total.	Per square mile.	Per acre.
By Government agency	172,964	274,001	446,965	...	...
By private agency	6,579,543	12,171,032	18,750,575	...	...
Free grants	9,730	.....	9,730	...	...
Total	6,762,237	12,445,033	19,207,270	4,444	7

The quantities of timber and fuel removed from the protected and district forests without payment cannot be given, but those on which revenue has been paid are as follow:—

			Cubic feet of solid wood.
Timber	...	...	511,891
Fuel	...	...	1,263,933
Total	...	...	1,775,824

As this is the first time that a fairly accurate estimate of the total outturn has been made, it will not be possible to compare the data for 1882-83 in detail with those of former years. It appears, however, that the yield has increased during the year by about two millions of cubic feet.

88. Of minor produce, the following articles may be mentioned as having been removed from the forests :—

ARTICLES.	From Reserves.	From Protected and District Forests.	Total.
Bamboos	4,032,925 pieces.	13,143,550 pieces.	17,176,475 pieces.
Canes	17,642 maunds.	34,537 maunds.	52,179 maunds.
Grass	258,854 "	15,155 "	274,009 "
Golpatta	3,505,665 "	8,650 "	3,514,315 "
Hental	2,150 "	84,925 "	87,075 "
Shells	122,220 "	36,975 "	159,195 "
Wax and honey	2,778 "	2,391 "	5,169 "

The quantities given under protected and district forests are only those which have been paid for.

89. The financial results compare as follow with those of the previous year :—

YEAR.	Receipts.	Charges.	Surplus.
	Rs.	Rs.	Rs.
1882-83	6,93,959	3,82,184	3,11,775
1881-82	6,33,734	3,94,609	2,39,125
Increase	60,225	.....	72,650
Decrease ... ..	.....	12,425	.....

The revenue has been increased and the charges reduced, so that the surplus is more by Rs. 72,650 than that of the previous year. The receipts have steadily risen during the last ten years, and there is every prospect that they will continue to increase.

90. Arranged under the main heads of Receipts and Charges, the financial results are as follow :—

	Receipts.	Charges.	Surplus.	Deficit.
	Rs.	Rs.	Rs.	Rs.
Departmental operations	1,58,181	1,41,337	16,794	.....
Other revenue	5,35,828	1,06,458	4,29,370	.....
Formation, protection, and improvement of forests ... ..	.....	1,34,389	.....	1,34,389
Total	6,93,959	3,82,184	3,11,775	.....

The surplus derived from departmental operations is small, but it is still higher, per cubic foot of wood removed, than that obtained by the sale of produce removed from the forests by purchasers.

The departmental operations are being carried on in the Sub-Himalayan divisions, while in the others nearly all material is removed by private agency. In the former, successful efforts have been made of late to substitute private agency for departmental working, and, if this can be done without a serious sacrifice of revenue and without defeating the objects of forest conservancy, it should be encouraged. A great improvement is apparent in the arrangements made for the working of the Kurseong and Darjeeling divisions,

91. The subjoined table exhibits the distribution of Receipts and Surplus amongst the different classes of forests :—

CLASS OF FORESTS.	AMOUNTS SHOWN IN THE ACCOUNTS OF THE DEPARTMENT.		Area under the manage- ment of the Department	REVENUE, PER SQUARE MILE.		
	Receipts.	Surplus.		Gross.	Net.	
					1882-83.	1881-82.
	Rs.	Rs.	Sq. miles.	Rs.	Rs.	Rs.
Reserved Forests	5,92,793	2,48,892	4,323	137	58	42
Protected	23,565	5,451	1,925	12	3	5
Other	77,601	57,432	5,107	15	11	10
Total	6,93,959	3,11,775	11,354	61	28	21

The net revenue per square mile of reserved forests has risen from Rs. 42 to Rs. 58. Calculated for the whole forest area under the Department, the net revenue has risen from Rs. 21 to Rs. 28 per square mile, which is satisfactory.

North-Western Provinces and Oudh.

92. The numbers of trees of all kinds felled during the year, with their cubical contents, are shown in the subjoined table :—

CIRCLE.	NUMBER OF TREES FELLED.	CONTENTS, IN CUBIC FEET.	
		Total.	Per tree.
Central	60,749	635,375	10
Oudh	1,325,655	1,986,176	1.5
School	14,294	1,059,953	74
Total in 1882-83	1,400,698	3,681,504	2.6
Total in 1881-82	1,150,105	3,676,424	3.2
Increase in 1882-83	250,593	5,080	.....
Decrease " " ... ..	.....	.....	0.6

93. The total outturn or yield of the forests in the Oudh Circle, which has been given in a uniform measure, is as follows :—

	Cubic feet.
Timber, saplings and poles	1,956,176
Fuel	317,152
Bamboos	100
Total	2,303,428

This yield is equivalent to $4\frac{1}{2}$ cubic feet per acre of tree forest. In future Reports it may be found practicable to give the yield in the same manner for the other Circles.

94. The selection fellings made during the year by departmental agency, comprised in the above data, are as follow :—

CIRCLE.	NUMBER OF TREES.	CONTENTS, IN CUBIC FEET.	
		Total.	Per tree.
Central	25,898	313,325	12
Oudh	16,942	676,855	40
School	1,898	271,709	143
Total in 1882-83	44,738	1,261,889	28
Total in 1881-82	31,485	1,001,482	32
Increase in 1882-83	13,253	260,407	.....
Decrease „ „ ... ..	.....	.....	4

95. By arranging the trees cut in 1882-83 according to species, the following table has been obtained :—

CIRCLE.	Sal.	Asna.	Sissu.	Deodar.	Other Conifers.	Oak.	Miscellaneous.	Total.
Central	1,922	1,086	...	...	6,262	453	16,175	25,898
Oudh	16,725	119	98	...	...	...	...	16,942
School	46	...	...	770	745	331	6	1,898
Total	18,693	1,205	98	770	7,007	784	16,181	44,738

96. The quantities of timber and of the other principal items of produce cut and collected by Government agency are as follow :—

CIRCLE.	Timber.	Firewood.	Charcoal.	Bamboos.
	Cubic feet.	Maunds.	Maunds.	Number.
Central	174,393	92,900	8,066	1,156,939
Oudh	999,986	.....	66	.....
School	88,565	28,257	1,110	.....
Total in 1882-83	1,262,944	121,157	9,242	1,156,939
Total in 1881-82	702,701	180,587	9,159	1,248,985
Increase in 1882-83	560,243	.....	83	.....
Decrease „ „ ... ..	.....	59,430	.....	92,046

A considerable increase has taken place in the departmental timber works, owing to a demand for railway sleepers, in consequence of which the Conservator of Forests in Oudh cut 14,287 crooked and otherwise inferior sal trees which were found unsuitable for long scantlings. Of this number, 8,712 trees were cut in Kheri, 4,581 in Gorakhpur, 987 in Bahraich, and 7 in Gonda.

97. The following table exhibits the principal items of material removed from the forests by consumers and purchasers :—

CIRCLE.					Timber.	Firewood.	Charcoal.	Bamboos.
					Cubic feet.	Maunds.	Maunds.	Number.
Central	...	...	...	...	448,596	276,763	2,057	19,124,788
Oudh	...	...	...	...	248,778	918,464	32,173	233
School	...	...	...	...	284,883	230,993	818	1,852,460
Total					982,257	826,220	35,047	20,977,480

These data are only approximately correct.

98. The free grants of timber to villagers and others are as follow :—

					Cubic feet.
Central Circle	...	...	...	...	157,891
Oudh	...	...	...	...	464,716
School	...	...	...	...	585,208
Total					1,207,815

99. The subjoined table gives the Receipts and Charges of the three Circles during the year under review :—

CIRCLE.					Receipts.	Charges.	Surplus or Deficit.	
							1882-83.	1881-82.
					Rs.	Rs.	Rs.	Rs.
Central	...	...	...	...	4,14,003	2,86,648	+1,27,355	+1,99,145
Oudh	...	...	...	...	3,84,430	2,88,707	+ 95,723	+ 80,639
School	...	...	...	...	2,14,970	2,63,670	— 48,700	—1,35,902
Total of 1882-83					10,13,403	8,39,025	+1,74,378	.....
Total of 1881-82					10,66,094	9,16,212	+1,49,882	*
Increase in 1882-83					.....	.....	24,496	...
Decrease „ „					52,691	77,187	.....	...

The total financial results of the year are slightly more favourable than those of 1881-82, but they are not equal to those of former years. The falling off in the surplus which occurred during the year under review in the Central Circle seems to have been due to a reduction in the sales from depôt and of khair timber for sugar mills. In Oudh extensive sleeper operations were commenced, but they had not at the close of the year materially affected the surplus of that Circle. In the School Circle an improvement has been effected in so far that the deficit of Rs. 1,35,902 in 1881-82 has been reduced to Rs. 48,700 in 1882-83; but a lasting improvement cannot be expected until the ordinary working expenses in the Hill Divisions have been considerably reduced.

Generally speaking, it should not be overlooked that steel sleepers are steadily rising in estimation, and that consequently the demand for wooden sleepers is likely to fall off considerably ere long. Under these circumstances the Department will probably do well to arrange the working of the forests so as to meet a steady local demand for timber and other forest produce, rather than an uncertain demand for railway sleepers.

Punjab.

100. The quantity of produce removed from the forests has considerably increased during the year under review, as will be seen from the following data :—

Description of produce.				1881-82.	1882-83.	Increase.	Decrease.
Trees and poles	...	...	No.	58,507	80,212	21,705	.....
Firewood	...	...	C. ft stacked.	2,169,962	4,514,332	2,344,370	.....
Charcoal	...	...	Mds.	18,872	9,759	.....	9,113
Bamboos	...	...	Pieces.	596,377	787,759	191,382	.....
Coal	...	...	Tons.	4,292	354	.....	3,938

The increase is chiefly due to the cutting of 3,277 dead or dying deodar trees in Chamba, to increased free grants in Kangra and Rawalpindi, and to extensive removals of firewood by purchasers. The sales from Government depôts are also largely in excess of those of 1881-82, owing to considerable quantities of old timber having been brought down by exceptional floods, especially on the Jhelum River. The value of the timber thus received in depôts was, however, small. The important subject of bringing out long timber, and thus increasing the net receipts, is receiving attention. This matter was taken up as far back as 1880, and it seems due to the measures then taken that the average cubic contents per log extracted from the Bashahr forests have, during the last two years, risen from $12\frac{1}{2}$ to $24\frac{1}{2}$ cubic feet. The financial results in the future will in a great measure depend on the further steps which may be taken in this direction.

A fair beginning had been made in the working of the coal mines in the Salt Range, but the outturn has, during the year under review, fallen from 4,292 tons to 354 tons. This unsatisfactory result is believed to be due to the transfer of the working from the Forest Department to the Salt Department.

101. The imports of timber from foreign territory seem to have amounted to about the same quantities as in the previous year. There was an increase in the imports of 6,957 logs, but a decrease of 34,046 sleepers. The figures are as follow :—

Year.						Logs.	Sleepers.
1882-83	...	...	...	...	...	30,346	273,883
1881-82	...	...	...	...	...	23,389	307,929
Increase in 1882-83	...	...	...	...	...	6,957	.....
Decrease in "	...	...	...	...	...	.....	34,046

102. The financial results of the last ten years are as follow :—

Year.				Receipts.	Charges.	Surplus.	Deficit.
				Ra.	Ra.	Ra.	Ra.
1873-74	...	...	...	7,32,540	5,97,162	1,35,378	.....
1874-75	...	...	...	8,31,874	6,46,480	1,88,394	.....
1875-76	...	...	...	9,05,742	5,54,226	3,51,516	.....
1876-77	...	...	...	5,98,754	5,22,483	76,271	.....
1877-78	...	...	...	6,83,710	5,17,166	1,66,544	.....
1878-79	...	...	...	6,00,620	5,23,554	.....	22,934
1879-80	...	...	...	6,49,819	4,80,676	1,69,143	.....
1880-81	...	...	...	6,71,679	4,95,368	1,76,311	.....
1881-82	...	...	...	6,88,308	5,16,270	1,72,038	.....
1882-83	...	...	...	7,66,710	5,60,751	2,05,959	.....
Average	...	...	...	7,03,275	5,41,413	1,61,862	.....

It will be observed that the Charges have moved within narrow limits, while the Receipts have oscillated between 5 and 9 lakhs of rupees, causing considerable fluctuations in the Surplus. During the year under review the Receipts were Rs. 63,435 and the Surplus Rs. 44,097 above the average of the last ten years. The Surplus of 1882-83 is the highest which has been realized during the last seven years, but it is little more than one-half of the Surplus of 1875-76. On the whole, the financial results were least favourable in 1878-79, but a decided improvement took place in 1879-80. Since then the Surplus has risen slowly. During the year under review the financial results were specially favoured by exceptional floods in the Jhelum, and by the sale of very large quantities of fuel at the Changa Manga Plantation, representing the return of expenditure incurred in former years.

Central Provinces.

103. Only a comparatively small portion of the produce derived from the forests is removed by Government agency. During the year under review it represented 8 per cent. of the receipts of the Department, and the operations are practically restricted to the working of the Banjar Valley and Ahiri forests, which are the two best sal and teak forests in the Central Provinces. The cuttings in these are chiefly made with the view of improving the forests and bringing into the market material, much of which would otherwise not be made available. Very large quantities of forest produce are removed from the reserves by purchasers under various systems, but it has not been possible to give the quantities of timber and fuel in a uniform measure; it is hoped that an attempt will be made to do this in the Report for 1883-84.

104. As regards the methods of working the forests in the Central Provinces, the following extract from a Report on Forest Management in the Central Provinces, by the present Inspector-General of Forests, dated the 1st June, 1883, may prove interesting:—

As the Government forests of the Central Provinces, though reserves under Chapter II of the Forest Act, have to supply not only public works and industrial enterprises, but also and chiefly the ordinary requirements of the people of the country, they are worked in a variety of ways to suit the demands made on them. On the whole, the methods of working may be brought under the following four heads:—

- (1) Commutation.
- (2) The license system.
- (3) The kham tahsil system.
- (4) Government agency.

It will be useful to explain shortly what each of these systems means.

1.—THE SYSTEM OF COMMUTATION.

Under this system is generally understood the payment of a fixed sum per annum, in return for which the payee may supply himself with certain classes of forest produce. The payment may be fixed—

- (1) by the plough;
- (2) by the house;
- (3) by the land revenue; or
- (4) by the income of the payee.

And, again, the payment may entitle the payee to the removal of—

- (a) any forest produce required for domestic purposes;
- (b) any forest produce, except timber or bamboos; or
- (c) certain articles only.

Grazing is, as a rule, not included in commutation, but must be paid for separately, according to the number of cattle sent into the Government forest. In some cases each individual takes out a grazing license, in others arrangements are made for whole villages. Rs. 48,700. Ordinarily, commutation is not granted unless the whole village commutes; but in some rule has been set aside. The commutation passes are issued either by the Forest ordinary work or the tahsildars, or special vendors. According to the information supplied, the present in force in the following districts:—Bhandara, Balaghat, Chanda,

Seoni, Saugor, Betul, Nimar, Chhindwara, Raipur, and Sambalpur. The details of the system and the rates payable differ according to districts. The rates per annum range from 2 annas to Rs. 2 per house or plough. In some cases restrictions are enforced as regards the quantity of each kind of produce which may be removed; in others no limit has been fixed beyond what is required for ordinary domestic purposes.

As an instance of the manner in which the system is worked, the following details referring to the Bhandara District may be given. The villages which are allowed to commute are those which are situated in close proximity to the forests. The people are divided into agriculturists and non-agriculturists, who pay at the following rates:—

Agriculturists—from 4 annas to Rs. 2 for each plough, according to circumstances.

Non-agriculturists—are assessed according to their income, and are divided into the following classes:—

Class	I.—Incomes not exceeding 50 per annum	R.				Rate.		
						Rs.	A.	P.
						0	2	0
"	II.—"	150	"			0	6	0
"	III.—"	300	"			0	12	0
"	IV.—"	500	"			1	4	0
"	V.—" exceeding "	500	"			2	0	0

The commutation licenses are for the official year, and they are issued by the Forest Establishment. They cover the removal of the following articles:—

- (1) Firewood and dead leaves.
- (2) Wood for fencing and for repairing houses.
- (3) Wood for ploughs.
- (4) Grass for thatching.
- (5) Bamboos.

Firewood comprises the following articles:—

- (a) dead or fallen timber of the unreserved kinds;
- (b) branches of unreserved kinds of wood;
- (c) brushwood, thorns, and undergrowth generally.

The following kinds of trees are reserved, and cannot be cut without the permission of the Deputy Commissioner (or the Forest Officer under his orders):—teak, blackwood, saj, sal, bija, mohwa, and achar.

On the whole, the system of commutation has been discouraged of late years, as it leads in many instances to waste of material. It is now considered a fairer arrangement that the people should pay according to the quantities which they remove, and this has led to the license system.

2.—THE LICENSE SYSTEM.

Any person requiring produce from a Government forest takes out a license before proceeding to the forest, for which he pays at certain rates fixed according to circumstances in different parts of the country. The rates are fixed per cart, head, or other load, or per quantity in maunds or cubic feet. They vary considerably in different parts of the province. The following are some of the rates in force in the Chanda District:—

FOREST PRODUCE.						FOR THE RESIDENTS OF THE DISTRICT.	FOR OUTSIDERS.
						Per cart-load.	Per cart-load.
						Rs. A. P.	Rs. A. P.
Timber	...	...	...	...	...	0 4 0	3 0 0
Firewood	...	...	...	...	...	0 1 0	0 4 0
Bamboos	...	...	...	...	...	0 4 0	2 8 0
Grass	...	...	...	...	...	0 1 0	0 4 0
GRAZING.						Per head, annually.	Per head, annually.
Buffalo	...	...	...	...	...	0 2 0	0 3 0
Bullock or cow	...	...	...	...	...	0 1 0	0 2 0
Sheep or goat	...	...	...	...	...	0 0 3	0 0 3

To make it as easy as possible for the people to obtain the licenses, they are sold by the Forest Establishment, Postmasters, Police Officers, Tahsil Establishments, School-masters, or private individuals duly authorized. The license vendors, except those belonging to the Forest Establishment, receive a commission on the sales. The licenses are either for fixed values or they are not. The former are of two classes: one gives the details of the produce and the other only the value; in the latter case the purchaser can remove under it any produce he chooses up to the value of the license. The licenses of no fixed value show the details of the produce which may be removed under them and the amount paid.

The license system has been much elaborated in the Central Provinces, as it is the most suitable method of disposing of the forest produce, and is at the same time fair to the consumer. In some cases the description of the produce is indicated by the colour of the paper on which the license is printed; in others the license is illustrated by a picture of the produce to which it has reference, as, for instance, a man carrying a head-load of grass or a bullock carrying a load, or a cart with two bullocks and laden with grass or timber, &c. In other cases the value is indicated by printing the *fac-simile* of the coin in question on the license; for instance, a four anna piece printed on a license indicates that four annas' worth of produce may be removed under it. And, again, in other instances the value is represented by stamps affixed to the license.

The objects of all these measures and devices are—

- (1) to facilitate the purchase of the licenses,
- (2) to prevent the purchasers being cheated, and
- (3) to facilitate the control over the produce removed; the Forest Guards are, as a rule, not able to read or write, but they know the value and purport of the licenses by the colour of the paper, *fac-similes*, &c., indicated above.

3.—THE KHAM TAHSIL SYSTEM.

A modification, though by no means an improvement, of the license system is the kham tahsil system, under which the purchaser proceeds to the forest without let or hindrance, removes the produce he requires, and pays for it, on passing out of the forest, at one of a series of stations established on the main lines of export.

The kham tahsil system, if applied to forests which it is intended to maintain permanently, has serious drawbacks, which it is not necessary to explain here, as the system is in force in one forest only, the Moharli Reserve, and as it is not intended to extend it. There were special reasons why the system was applied to the Moharli Reserve. In the first place, the exports from it form as yet only a fraction of the possible yield, and the exporters do not cut the material, but they buy it from certain people living in forest villages in the reserve, who cut and prepare the produce for sale. When the demand on the reserve has sufficiently increased to approach its possible yield, a change in the system will be called for. In the meantime, it may be mentioned that the Ranger in charge of the reserve controls the Naka Establishment.

4.—GENERAL REMARKS ON THESE THREE SYSTEMS.

Considering the above-mentioned three systems generally, it will be noticed that they in themselves put very little restriction on the manner in which the forests are used by the people. In order to maintain and improve the areas, certain restrictions are, however, enforced. It has been shown in a previous chapter that the area of the Government forests on the 1st April 1882 stood as follows:—

				Area, in square miles.
First-class reserves	...	...	...	2,588
Second " "	...	...	...	16,842
			Total	19,430
Add unreserved forests	...	...	...	289
			Grand Total	19,719

In the first-class reserves certain blocks only are opened for the exercise of the commutation, license, and kham tahsil systems, while the others are under reproduction or special improvement. In some instances certain inferior species may be cut anywhere in a first-class reserve; but care is taken to give this permission only where it is not likely to lead to damage. And even in the open blocks valuable species—like teak, sal, bija, saj, blackwood, and others—may only be cut with the special sanction of the Divisional Forest Officer. Bamboos are, on the other hand, so abundant in most first-class reserves (certain areas in the northern part of the province excepted) that no restrictions regarding their removal have as yet been enforced. In the demand increases, it will, no doubt, be found necessary to work even bamboo forests in rotation, so as to ensure the continued production of good healthy shoots.

ordinary the second-class reserves working by rotation has been attempted by opening certain cutting and by closing others. This, however, refers only to a small part of the area (Mugor Districts). The ordinary restriction which has been enforced consists in

the prohibition to cut the more valuable species, varying in number according to circumstances, without the previous sanction of the Divisional Forest Officer, or the Deputy Commissioner, as the case may be. With this simple restriction, the second-class reserves, it is believed, have not deteriorated since they were taken under protection; on the contrary, in many instances, they have even improved; but in the same degree as the Malguzari forests disappear or are reduced in yielding power, and the demand on the Government forests increases, it will be necessary to introduce additional conservancy measures. The second-class reserves will, similar to the method now followed in some of the first-class reserves, have to be divided into blocks, of which some are open for cutting, while others are closed for reproduction and improvement, until, in fact, all difference between first and second-class reserves disappears.

105. The financial results of the year are as follow:—

CLASS OF FORESTS.	RECEIPTS.	CHARGES.	SURPLUS.	
			Total.	Per square mile of Forest.
	Rs.	Rs.	Rs.	Rs.
First Class Reserves	1,87,130	1,78,879	8,251	3
Second "	7,90,517	2,33,369	557,148	33
Total of 1882-83... ..	9,77,647	4,12,248	5,65,399	29
Total of 1881-82... ..	11,72,884	4,97,013	6,75,871	35
Decrease in 1882-83	1,95,237	84,765	1,10,472	6

The falling off under both Receipts and Charges is due to a reduction of the departmental timber operations. Apart from these, the Receipts have actually increased, while the Charges are about the same as in the previous year. Although the total results do not compare favourably with those of 1881-82, the Surplus is slightly higher than the average of the last five years, and in so far the results are not unsatisfactory.

British Burma.

106. The number of trees girdled during the year is as follows:—

CIRCLE.	TEAK.			OTHER TREES.
	Inside Reserves.	Outside Reserves.	Total.	
Pegu	3,690	11,294	14,984	2,657
Tenasserim	1,021	1,591	2,612	3,538
Total	4,711	12,885	17,596	6,195

The number of teak trees girdled is 1,596 in excess of Mr. Brandis's forecast, the whole excess having occurred in the Tenasserim Circle. Sanction was given to girdle 2,500 trees outside reserves in that Circle, but, owing to a mistake on the part of the Officer entrusted with the work, 1,021 of the trees killed were standing inside the Mithawé Reserve.

It does not appear desirable to exceed Mr. Brandis's forecast until the formation and demarcation of the principal reserves in both circles have been completed, and until considerable progress in the survey and preparation of working-plans has conclusively shown that the annual yield may safely be

increased with due consideration of the fact that the forests in British Burma must ultimately be in a fit condition to make up for the reduction in imports from foreign States, which is sure to set in at no distant date.

107. The yield of the forests is given as follows:—

					TIMBER EXTRACTED, IN TONS.		
					Teak.	Other timber.	Total.
By Government agency ...	...	...	...	...	40,272	8,440	48,712
By purchasers and under trade permits ...	...	...	...	...	3,642	32,904	36,546
Under free grants ...	...	...	...	...	85	8,079	8,164
By lease-holders and others ...	...	...	...	...	4,327	743	5,075
Total					48,326	50,171	98,497
Outturn of 1881-82 ...	...	...	...	...	31,246	87,171	118,417
Increase in 1882-83 ...	...	...	...	...	17,080	.....	.....
Decrease in " ...	...	...	...	...	.....	97,000	19,920

There has been an increase of 55 per cent. in the outturn of teak and a reduction of 42 per cent. in that of other woods, or a falling off in the total outturn of 17 per cent. These large fluctuations have not been satisfactorily explained in the Reports. If the high rates ruling during the year stimulated the extraction of teak, it is not understood why the extraction of other timber should at the same time have fallen off.

108. As far as can be gathered from the Reports, the following quantities of timber were imported and exported during the past two years:—

YEAR.					Timber imported.	Timber exported.
1881-82	...	...	...	...	154,290 tons.	133,751 tons.
1882-83	...	...	...	...	140,604 " and 58,876 pieces.	151,151 "

There has apparently been an increase in both imports and exports. The value of the exports is estimated at Rs. 1,40,46,610.

109. The financial results of the year compare as follow with those of the previous year:—

YEAR.				Receipts.	Charges.	Surplus.	Proportion of Surplus to Receipts, in per cent.
				Rs.	Rs.	Rs.	Rs.
1882-83	...	...	...	25,03,884	12,28,959	12,74,935	51
1881-82	...	...	...	22,31,804	11,50,222	10,81,582	48
Increase in 1882-83	...	...	...	2,72,080	78,737	1,93,353	.....

These results are very satisfactory, especially if it is remembered that the reduction of the duty on foreign timber, from 7 per cent. to 1 per cent. and subsequently to one-half per cent. *ad valorem*, represents a loss of revenue amounting to Rs. 2,63,504. The large receipts are to a considerable extent due to the high price of teak prevailing during the year.

Assam.

110. The departmental operations have now been reduced to the extraction of the material which is required for the use of the department. During the year under review 219 trees were cut departmentally against 378 in the previous year. It is expected that all the stocks now remaining in depôts will be sold before the close of 1883-84.

111. As far as can be gathered from the Report, the following trees have been removed by purchasers from the forests in the Assam Valley Districts, including the Khasi and Jaintia Hills :—

	Sal.	Other Reserved trees.	Unreserved trees.	Total.
From Reserved Forests	9,343	636	669	10,648
„ Protected and District Forests	2,659	1,790	2,556	7,005
Total ...	12,002	2,426	3,225	17,653

In addition, certain quantities of poles, boats, and fuel have been removed, but they are given in various measures. Future Reports should give an estimate of the total quantities of wood removed from the reserved forests, and, as far as they can be ascertained, those removed from the protected and district forests.

The following quantities of timber were removed by purchasers from the Cachar forests :—

			Pieces.	Cubic feet.
In 1882-83	...	...	22,925	605,280
„ 1881-82	...	...	15,888	422,219

These figures show a considerable increase during the year under review. The quantities removed from the Sylhet forests have not been given.

It is reported that 20,447 trees, representing a value of Rs. 83,538, were made over free of charge to the Assam Railway and Trading Company under the concession granted to them.

112. The revenue realized by the sale of timber on new grants of waste land is as follows :—

YEAR.	AREA OF LAND ALLOTTED FOR CULTIVATION.	AMOUNT OF FOREST REVENUE REALIZED OR DUE.	
		Total.	Per acre.
	Acres.	Rs.	Rs. A. P.
1882-83	4,246	7,438	1 12 0
1881-82	736	662	0 14 4

These data seem to indicate fresh activity in the tea industry.

113. The rubber mahals in British territory were sold for Rs. 32,792. The quantity of rubber collected cannot be given with any degree of accuracy, but it is roughly estimated at 4,178 maunds. If this should be approximately correct, Government would receive only about Rs. 8 for every maund of rubber.

An experiment has been made in the Balipara Reserve (Darrang and Nowgong Division) of tapping 50 full-sized rubber trees, with the view of ascertaining their yield under systematic management. These trees seem to have yielded during the first year on an average about $4\frac{1}{2}$ seers of dry rubber per tree, which realized Rs. 5-13-1, after deducting all expenses of collecting the rubber. The results of the further tapping of these trees will be expected with interest. If the trees should be found to stand similar tappings regularly, the Balipara rubber planation will doubtless prove a remunerative investment.

The imports and exports of rubber, as far as they can be given, were as follow :—

					1882-83.	1881-82.
					Mds.	Mds.
Imports	...	...	...	...	4,586	2,840
Exports	...	...	...	...	10,766	9,026

114. The Forest Department of Assam was separated from that of Bengal in 1873-74. Since then the financial results have been as follow :—

YEAR.					Receipts.	Charges.	Surplus.	Deficit.
					Rs.	Rs.	Rs.	Rs.
1873-74	...	...	...	...	62,726	50,623	12,104	.....
1874-75	...	...	...	...	64,749	59,523	5,226	.....
1875-76	...	...	...	...	1,07,302	61,884	45,418	.....
1876-77	...	...	...	...	81,568	89,920	.....	8,352
1877-78	...	...	...	...	1,34,326	1,00,287	34,039	.....
Average of first 5 years					90,134	72,447	17,687	.....
1878-79	...	...	...	...	1,61,779	1,26,027	35,752	.....
1879-80	...	...	...	...	1,64,936	1,32,830	31,506	.....
1880-81	...	...	...	...	1,68,997	1,42,725	26,272	.....
1881-82	...	...	...	...	1,66,053	1,65,361	692	.....
1882-83	...	...	...	...	2,48,605	1,71,823	76,782	.....
Average of second 5 years					1,81,954	1,47,753	34,201	.....
Average of 10 years					1,36,044	1,10,100	25,944	.....

Taking into consideration the special difficulties against which the Department has had to contend during the first ten years of its existence, these results are certainly not unsatisfactory. The demand for forest produce is as yet considerably below the quantity which the forests can permanently yield, and, as it increases with the progress of cultivation, the Assam forest reserves will doubtless prove to be valuable Government estates.

Coorg.

115. The number of timber trees felled departmentally during the last two years is as follows :—

				Teak.	Others.	Total.
In 1882-83	...	...	...	494	1,186	1,680
„ 1881-82	...	...	...	808	741	1,549

The number of sandalwood trees cut during the year 1882-83 is 1,528.

116. The following quantities of timber were received in, and sold from, depôts :—

					TIMBER, IN CUBIC FEET.			
YEAR.					Brought to Depôts.			Sold locally.
					Teak.	Others.	Total.	
1882-83	...	...	...	...	15,972	17,988	33,960	40,388
1881-82	...	...	...	...	23,404	16,407	39,811	28,966

In addition to the above, a quantity of small pieces, bamboos, and fuel was brought to depôts and sold. On the whole, the operations were conducted on about the same scale during the two years.

The quantities of produce removed from the forests by purchasers were small, and the Deputy Conservator does not, for the present, expect any special increase in them.

117. The sandalwood operations, compared with those of previous years, are as follow :—

YEAR.	AMOUNT BROUGHT TO DEPÔTS, IN TONS.	SOLD DURING THE YEAR.		
		Number of tons.	Amount realized.	
			Total.	Per ton.
			Rs.	Rs.
1880-81	118½	112½	34,324	305
1881-82	126½	60½	14,059	231
1882-83	117½	192½	77,407	403
Total	362½	365½	1,25,790	344

Considerable fluctuations have occurred in the sales, according to the state of the market ; but the total quantity sold during the last three years is almost the same as that brought to depôts, and the average outturn is very near the estimate of 120 tons per annum. The price per ton, which fell considerably during the previous three years, is now almost as high again as it was four years ago.

118. The financial results are as follow :—

YEAR.	Receipts.	Charges.	Surplus.
	Rs.	Rs.	Rs.
1882-83	1,38,022	64,782	73,240
1881-82	1,00,364	59,858	40,506
Increase in 1882-83	37,658	4,924	32,734

The year under review shows a marked increase in both the gross and net revenue—an improvement which is due to the increased sales of sandalwood and the higher rates obtained for it. The receipts from the sale of timber are as yet small, and, with the view of increasing them, it is proposed to construct a tramway from Hunsur to the Nalkeri and Hatgatnad forests.

Ajmere.

119. The financial results of the year, compared with those of 1881-82, are as follow :—

YEAR.	Receipts.	Charges.	Deficit.
	Rs.	Rs.	Rs.
1882-83	7,126	11,284	4,158
1881-82	4,066	13,954	9,888
Increase in 1882-83	3,060	.....	.....
Decrease in " ... ..	.....	2,670	5,730

The receipts were increased and the charges were less, hence a reduction of Rs. 5,730 in the deficit.

The receipts were derived from the following sources :—

			1882-83.	1881-82.
			Rs.	Rs.
Firewood and charcoal	...	...	2,472	669
Bamboos	...	...	66	.....
Grazing and grass	...	...	3,720	1,755
Minor produce	...	...	212	161
Miscellaneous	...	...	626	1,481
Total	...	...	7,126	4,066

On the whole, the receipts are gradually rising, and it is expected that they will, a few years hence, equal the charges,

Berar.

120. The financial results of the year, arranged according to the different classes of forests, are as follow :—

CLASS OF FOREST.	Receipts.	Charges.	Surplus.	Deficit.
	Rs.	Rs.	Rs.	Rs.
State Reserves	41,899	62,675	.....	20,776
District	8,423	25,748	.....	17,325
Unreserved Forests	2,36,721	61,609	1,75,112	.....
Total	2,87,043	1,50,032	1,37,011	.....

The deficit of the State Reserves is only one-half of what it was in 1881-82, and the Conservator hopes to see it soon disappear altogether. The deficit of the District Reserves is also less than it was in 1881-82.

121. The totals of receipts and charges compare as follow with those of previous years :—

YEAR.	Receipts.	Charges.	Surplus.
	Rs.	Rs.	Rs.
1878-79	2,85,670	1,07,350	1,78,320
1879-80	3,07,501	1,10,514	1,96,987
1880-81	2,66,556	1,23,969	1,37,587
1881-82	2,33,511	1,52,985	80,526
1882-83	2,87,043	1,50,032	1,37,011

After a considerable decline of the balance sheet during several years, a decided improvement has been effected during the year under review, the receipts having increased by Rs. 53,532, while the expenditure has, at the same time, been reduced by Rs. 2,953.

Madras.

122. The financial results of the year are as follow :—

CIRCLE.				Receipts.	Charges.	Surplus.
				Rs.	Rs.	Rs.
Northern	...	...	...	3,91,298	2,53,925	1,37,373
Southern	...	...	...	5,15,144	3,90,940	1,24,204
Total of 1882-83...				9,06,442	6,44,865	2,61,577
Total of 1881-82...				8,06,024	6,03,106	2,02,918
Increase in 1882-83				1,00,418	41,759	58,659

The receipts are almost the same as those estimated in the forecast prepared by Mr. Brandis and Major Campbell Walker, while the charges are considerably lower. The receipts and charges are now altogether provincial, but it is satisfactory to notice that the balance sheet shows a fair surplus. It is hoped that the departmental finance will be administered on the same principle in future years, as it is desirable that the receipts should ordinarily show a fair margin of profit after deducting the charges of the Department.

Bombay.

123. The financial results of the year, compared with those of 1881-82, are as follow :—

CIRCLE.				Receipts.	Charges.	Surplus.
				Rs.	Rs.	Rs.
Northern	...	...	...	9,13,531	5,37,124	3,76,407
Southern	...	...	...	7,33,058	4,09,970	3,23,088
Sind	...	...	...	4,43,764	3,10,665	1,33,099
Total in 1882-83...				20,90,353	12,57,759	8,32,594
Total in 1881-82...				18,28,089	11,48,458	6,79,631
Increase in 1882-83				2,62,264	1,09,301	1,52,963

The increase in the receipts was due to a considerably larger demand for forest produce generally in the Northern and Southern Circles and to enhanced sales of railway fuel in Sind.

Export of Forest Produce.

124. The following statement shows the quantities of forest produce exported from India during the year :—

ARTICLES,	QUANTITIES CWT. TR.	TONS OF 20 CWT. FEET.	VALUATION AT PORT OF SHIPMENT IN 1882-83.	
			Total	Per ton.
	Average five years 1877-78 1881-82	1882-83.		
	772	7,243		
	35,70,97	60,2		
1. Caoutchouc	572	528	Rs. 12,59,165	Rs. 2,385
2. Shell-lac	3,402	5,143	55,47,619	1,079
3. Lac-dye	429	196	46,104	235
4. Sandalwood, ebony, and other ornamental woods	.....	(Not known)	4,07,037	(Not known)
5. Cutch and gambier	11,484	12,325	30,52,434	243
6. Myrabolans	21,405	23,558	18,46,976	78
7. Teak	51,079	59,187	61,12,597	103
Total in 1882-83	.....	.....	1,82,71,932	.....
Total in 1881-82	.....	.....	1,62,40,269	.....
Increase in 1882-83	.....	.....	20,25,663	.....

These data show an increase under every head except caoutchouc and lac-dye. The total value is upwards of twenty lakhs of rupees in excess of that of the previous year.

Summary of the Revenue and Expenditure of the Fo

BUDGET HEADS.	BENGAL PRESIDENCY (BRITISH TERRITORIES).									
	Bengal.	North-Western Provinces and Oudh.	Punjab.	Central Provinces.	British Burma.	Assam.	Coorg.	Ajmere.	Biluchistan.	Forest Surveys.
RECEIPTS.	Ra.	Ra.	Ra.	Ra.	Ra.	Ra.	Ra.	Ra.	Ra.	Ra.
I.—Timber and other produce removed from the forests by Government agency.	1,57,682	4,22,758	3,54,931	75,063	90,23,913	17,534	1,06,232	217	4,644	.....
II.—Timber and other produce removed from the forests by consumers or purchasers.	5,02,062	5,59,639	3,32,665	8,69,066	2,55,350	2,20,316	24,974	6,263	365	.....
III.—Confiscated drift and waif wood.	6,022	8,779	97,599	4,536	1,22,224	2,765	.....	1	.....	.....
IV.—Revenue from forests not managed by Government.	.....	7,120	23,541	9,728	69,373	5,343	.....	.....	.....	.....
V.—Miscellaneous ...	22,173	15,107	17,974	19,254	27,034	2,647	6,826	625	30	348
Total Receipts ...	6,93,959	10,13,403	7,66,710	9,77,647	25,03,694	2,43,605	1,38,022	7,136	5,039	348
EXPENDITURE.										
A.—Conservancy and Works.										
I.—Timber and other produce removed from the forests by Government agency.	93,122	3,04,774	1,35,258	33,629	7,71,340	966	12,502	48	2,763	.....
II.—Timber and other produce removed from the forests by consumers or purchasers.	26,508	33,653	1,326	1,57,413	6,684	5,622	.....	106	.....	.....
III.—Confiscated drift and waif wood.	1,219	580	18,442	177	56,435	129	.....	.....	.....	.....
IV.—Revenue from forests not managed by Government.	.....	930	17,813	.....	.....	.....	.....	.....	.....	.....
V.—Rent of leased forests, and payments to shareholders in forests managed by Government.	.....	12,826	36,740	251	.....	.....	.....	.....	.....	.....
VI.—Live and dead stock	10,143	22,300	.....	8,096	1,422	9,476	1,953	180	50	3,135
VII.—Communications and buildings.	19,604	1,06,717	.....	3,000	27,121	17,273	1,338	610	.....	.....
VIII.—Demarcation, improvement, and extension of forests.	48,788	.....	2,835	23,644	55,667	39,762	18,253	2,734	230	6,425
IX.—Miscellaneous ...	6,178	.....	1,360	4,335	15,028	2,701	1,600	9	.....	.....
Total Conservancy and Works.	2,05,562	3,51,072	2,63,557	2,35,545	9,73,747	75,929	35,648	3,689	3,098	9,500
B.—Establishments.										
I.—Salaries ...	1,50,623	2,81,510	2,28,919	1,48,696	2,10,581	79,389	23,018	6,257	6,932	26,602
II.—Travelling allowances.	19,444	32,767	33,435	16,429	30,534	13,213	5,254	963	1,823	4,194
III.—Contingencies ...	6,555	13,943	14,840	11,578	14,097	3,292	862	375	108	1,239
Total Establishments ...	1,76,622	2,88,220	2,77,194	1,76,703	2,55,212	95,894	29,134	7,595	8,863	32,035
Grand Total of Expenditure.	3,82,184	8,39,025	5,60,751	4,12,943	12,28,959	1,71,823	64,782	11,284	11,961	41,535
SURPLUS ...	3,11,775	1,74,378	2,05,959	5,65,399	12,74,935	76,782	73,240	.....	.....	.....
DEFICIT ...	.....	.....	.....	.....	.....	.....	.....	4,153	6,923	41,947

STATEMENT II.

Financial Results of Forest Administration for the year 1882-83.

PROVINCE.	TIMBER AND OTHER PRODUCTS REMOVED FROM THE FORESTS BY GOVERNMENT AGENCY.			OTHER REVENUE.			FORMA- TION, PRO- TECTION, AND IM- PROVE- MENT OF FORESTS.
	Receipts.	Charges.	Surplus or Deficit.	Receipts.	Charges.	Surplus or Deficit.	Charges.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Bengal	1,58,131	1,41,337	16,794	5,35,828	1,06,458	4,29,370	1,34,389
North-Western Provinces and Oudh.	4,23,662	4,36,841	—13,179	5,89,741	1,55,899	4,33,842	2,46,285
Punjab	3,92,530	2,85,123	1,07,407	3,74,180	1,14,039	2,60,141	1,61,589
Central Provinces ...	75,062	53,711	21,351	9,02,585	2,21,262	6,81,323	1,37,275
British Burma ...	21,50,827	9,30,942	11,69,885	3,53,067	90,434	2,62,633	1,57,583
Assam	20,298	1,093	19,205	2,28,307	58,639	1,69,668	1,12,091
Coorg	1,06,222	24,186	82,036	31,800	6,623	25,177	33,973
Ajmere*	218	48	170	6,908	2,108	4,800	9,123
Biluchistan	4,644	7,225	—2,581	395	2,216	—1,821	2,520
Forest Survey* ...	...	...	...	343	...	343	41,595
Total	33,31,594	19,30,506	14,01,088	30,23,159	7,57,678	22,65,481	10,36,423
Berar	5,117	678	4,439	2,81,926	1,02,686	1,79,240	40,668
Total Bengal Presidency ...	33,36,711	19,31,184	14,05,527	33,05,085	8,60,364	24,44,721	10,83,096
Madras				Data not available.			
Bombay.				Data not available.			
GRAND TOTAL ...	...	...	...	...	...	...	...

* These data have been prepared in the Inspector-General's Office; they are only approximately correct.

STATEMENT III.

**Receipts, Charges, and Surplus of the Forest Department throughout
India during the nineteen years from 1864-65 to 1882-83.**

(Arranged in periods of three years.)

STATE

Receipts, Charges, and Surplus of the Forest Department throughout

(Arranged in periods)

PROVINCES.	RECEIPTS.							CHAR			
	1864-67.	1867-70.	1870-73.	1873-76.	1876-79.	1879-82.	1882-83.	1864-67.	1867-70.	1870-73.	1873-76.
	Average.	Average.	Average.	Average.	Average.	Average.		Average.	Average.	Average.	Average.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Bengal ...	44,569	1,37,995	1,36,206	1,66,947	3,54,884	5,48,199	6,93,959	49,559	1,29,245	98,137	1,07,992
North-Western Provinces and Oudh.	7,47,738	7,31,977	11,78,424	15,20,130	11,60,178	10,16,096	10,13,403	3,99,475	4,70,887	10,11,753	9,87,657
Punjab ...	2,45,083	3,39,531	8,09,455	8,24,385	5,94,361	6,69,935	7,66,710	2,58,164	4,32,291	9,11,741	5,99,289
Central Provinces ...	2,19,682	3,72,016	5,29,186	6,51,827	7,32,699	10,09,915	9,77,647	1,12,971	3,27,000	2,62,317	3,16,186
British Burma ...	7,52,972	8,16,178	8,05,997	13,07,481	14,30,684	16,42,869	25,03,891	2,86,813	3,90,674	3,71,737	6,50,640
Assam ...	Included in Bengal.			78,259	1,25,891	1,66,462	2,48,605	Included in Bengal.			57,343
Coorg ...	80,803	86,782	83,648	91,849	76,321	96,669	1,38,022	11,030	21,174	28,415	36,796
Ajmere ...	...	...	24	374	1,716	2,350	7,126	...	...	13,055	26,084
Biluchistan ...	...	...	...	...	...	16,496	5,039	...	...	...	...
Forest Survey ...	...	...	...	...	63	103	848	...	...	21,178	56,928
Total Bengal Presidency.	20,90,847	24,84,479	35,42,940	46,41,262	44,76,797	51,69,094	63,54,753	11,18,012	17,71,271	27,18,333	28,38,915
Madras ...	3,25,530	4,37,051	3,92,470	4,18,293	4,01,057	4,58,100	9,06,442	2,20,237	2,81,808	3,72,908	3,93,713
Bombay ...	9,66,363	11,10,995	11,58,013	12,20,252	12,23,360	16,25,203	20,90,853	6,50,183	5,73,019	6,40,190	7,66,711
Total British Provinces.	33,82,740	40,32,525	50,98,423	62,79,797	61,01,214	72,52,397	93,51,548	19,88,432	26,26,098	37,31,431	39,99,339
Benar ...	20,349	94,404	1,97,578	2,52,249	2,72,679	2,69,189	2,87,043	7,720	44,385	88,619	80,301
GRAND TOTAL ...	84,03,039	41,27,019	52,91,001	65,32,046	63,73,898	75,21,586	96,38,591	19,96,161	26,70,453	38,20,050	40,88,640

MENT III.

India during the nineteen years from 1864-65 to 1882-83.

of three years.)

GES.			SURPLUS.							PROVINCES.
1876-79. Average.	1879-82. Average.	1882-83.	1864-67. Average.	1867-70. Average.	1870-73. Average.	1873-76. Average.	1876-79. Average.	1879-82. Average.	1882-83.	
Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
2,70,524	3,35,246	3,82,184	— 4,990	8,750	38,069	58,955	84,360	2,12,953	3,11,775	Bengal.
7,99,484	7,70,793	8,39,025	3,48,263	2,61,090	1,66,671	5,32,473	3,60,694	2,45,303	1,74,378	North-Western Provinces and Oudh.
5,21,063	4,97,438	5,60,751	— 13,081	— 92,760	— 1,02,286	2,25,096	73,293	1,72,497	2,05,959	Punjab.
3,33,344	5,05,033	4,12,248	1,06,711	45,016	2,66,869	3,35,641	3,99,355	5,04,882	5,65,399	Central Provinces.
8,59,754	8,72,093	12,28,959	4,66,159	4,25,504	4,34,260	6,56,841	5,70,930	7,70,776	12,74,935	British Burma.
1,05,411	1,46,972	1,71,823	Included in		Bengal	20,916	20,490	19,490	76,782	Assam.
34,808	57,170	64,782	69,773	65,608	55,233	55,053	41,513	39,499	73,240	Coorg.
16,943	13,376	11,284	...	...	— 13,031	— 25,710	— 15,227	— 11,026	— 4,158	Ajmere.
...	17,048	11,961	...	...	...	...	...	— 552	— 6,922	Biluchistan.
59,179	43,234	41,595	...	...	— 21,178	— 56,928	— 59,116	— 43,131	— 41,247	Forest Survey.
30,00,515	32,58,403	37,24,612	9,72,835	7,13,208	8,24,607	18,02,337	14,76,282	19,10,691	26,30,141	Total Bengal Presidency.
3,79,422	3,74,806	6,44,865	1,05,293	1,55,243	19,562	24,580	21,635	83,294	2,61,577	Madras.
8,96,016	11,06,622	12,57,759	3,16,180	5,37,976	5,17,823	4,53,541	3,27,344	5,18,581	8,32,594	Bombay.
43,75,953	47,39,831	56,27,236	13,94,308	14,06,427	13,61,992	22,80,458	18,25,261	25,12,566	37,24,312	Total British Provinces.
1,03,990	1,30,823	1,50,032	12,620	50,109	1,08,969	1,62,948	1,68,689	1,38,366	1,37,011	Benar.
43,79,943	49,70,654	57,77,268	14,06,928	14,56,536	14,70,951	24,43,406	19,93,950	26,50,932	38,61,323	GRAND TOTAL.