

REVIEW

OF THE

FOREST ADMINISTRATION

IN THE

SEVERAL PROVINCES UNDER THE GOVERNMENT OF INDIA,

FOR THE YEAR

1881-82:

BY

W. SCHLICH, PH. D.,

INSPECTOR GENERAL OF FORESTS TO THE GOVERNMENT OF INDIA.

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Dated the 15th May 1883.

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CALCUTTA:

PRINTED AT THE HOME DEPARTMENT PRESS.

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## CHAPTER I.—INTRODUCTION.

### 1. RETIREMENT OF MR. BRANDIS.

THE most important event in Indian Forest Administration during the year 1881-82 was the retirement of Mr. D. Brandis from the office of Inspector General of Forests, consequent on his deputation on special duty to the Madras Presidency. Mr. Brandis made over charge of his office on the 15th October 1881; he remained in Madras until January 1883, when he proceeded on three months' privilege leave, at the end of which period he joined at the India Office in London, in order to assist in the re-organization of the arrangements for the education of the candidates for the Indian Forest Department; and since then he has finally retired from the Service.

2. Mr. Brandis was appointed Superintendent of Forests in Pegu, British Burma, in January 1856, and in 1857 the forests of Tenasserim and Martaban were added to his charge. In December 1862 he was placed on special duty under the Government of India to assist in organizing Forest Administration in other provinces; and on the 1st April 1864 he was appointed the first Inspector General of Forests to the Government of India. This appointment he has held for the long period of 19 years.

3. While holding the appointment of Superintendent of Forests in British Burma, Mr. Brandis thoroughly explored the teak forests of that province, and put their administration on a satisfactory footing. It was due principally to his determination, under great difficulties, that these valuable estates, which yield now an annual revenue of 22 lakhs of rupees, were saved to Government. Since his transfer to the Government of India in 1862, he has incessantly laboured to perfect the organization of the Department in the various provinces under the Government of India—a task to the performance of which he brought, not only a thorough command of details and an accurate knowledge of the requirements of Forest Administration, but a remarkable faculty of adapting means to ends, and of varying his suggestions to suit the circumstances of different parts of India. His numerous Inspection Reports and Reviews show at what a cost of personal exertion and self-sacrifice he mastered the conditions of Forest Conservancy in all parts of India; and his directions and instructions will for many years form the standard manuals for the guidance of those who may come after him.

4. Services similar to those which he has rendered to the Government of India have been given by him to the cause of Forestry in the minor presidencies also. In 1869 he was deputed to Bombay, and the organization of the Department in that presidency, which has worked remarkably well, is based on the proposals made by him. Mr. Brandis' deputation to the Madras Presidency, in October 1881, to confer with the Local Government on the whole subject of Forest Conservancy and Forest Legislation, entailed on him an amount of hard work and exposure which few men of his age would have cared to face, and which only his enthusiastic devotion to his profession would have induced him to undergo. The result of his mission to Madras has been to place the establishment of Forest Administration in that presidency on a sound footing, and his services have been acknowledged in the warmest terms by His Excellency the Governor in Council.

5. All legislation which has taken place on the subject of Forests in India has been carried through on Mr. Brandis' advice and with his assistance. In 1865 the first Indian Forest Act was passed, which defined the legal position of Government forests and provided for their protection and better management. This Act was amended in 1878, when the present Indian Forest Law, Act VII of 1878, came into force. The latter Act has been extended to the Provinces under the Government of India and to Bombay, but not to British Burma. In 1881 a special Act for Burma was passed, and in 1882 the Madras Forest Act received the assent of His Excellency the Governor General in Council.

6. Scarcely recovered from a severe illness, contracted in the performance of his arduous duties in India, Mr. Brandis was employed in England for about 18 months from October 1872 in continuing and completing an account of the Forest Flora of North-West and Central India—a work of the highest literary excellence, and which is of the greatest use, not only to Forest Officers in those parts of India, but also to Indian Botanists. He was also instrumental in causing the preparation and publication of several other works of the highest importance to Forest Officers. Amongst these are the "Forest Flora of British Burma," by S. Kurz; the "Manual of Indian Timbers," by J. S. Gamble; the "Manual of the Land Revenue Systems and Land Tenures of British India," by B. H. Baden-Powell; and the "Manual of Jurisprudence for Forest Officers," also by B. H. Baden-Powell.

7. Throughout his service Mr. Brandis has laboured to create a competent and efficient staff of superior and subordinate officers. The Science of Forestry, in its true meaning, being little known in this country when conservancy measures were first introduced, Mr. Brandis arranged, while in England in 1866, under the orders of Her Majesty's Government, for the professional education of the candidates selected for the Indian Forest Service. The measures then inaugurated by him have secured to India a staff of trained Forest Officers, to whose exertions the rapid development of the operations of the Department is in a large measure due.

8. Having thus provided for the recruiting of the superior staff, Mr. Brandis set to work on the establishment of an Indian Forest School, in which a competent staff of Rangers or Executive Officers could be trained. He submitted his scheme for such a School at Dehra Dun to the Government of India in 1877, and in the following year the School was opened. Some time elapsed of course before the institution could be brought into proper working order, but this has now been accomplished, and it is expected that, after the lapse of another year or two, thirty trained Rangers will leave the School annually.

9. Mr. Brandis has thus, during a period of twenty-seven years, been at work in building up a new branch of the public service. The difficulties in his way were very great, and it may be said, without exaggeration, that throughout this long period there has not been a day on which, if not actually incapacitated by illness, he has not been labouring in the cause of Forest Conservancy in this country. Apart from the important advantages which have thus been

secured to India, owing to the influence which well-preserved forests exercise on the climatic conditions of the country and the economic well-being of the people, Mr. Brandis' exertions have been accompanied by a substantial pecuniary benefit to the Government of India, the revenue from the Government forests, which amounted to 35 lakhs of rupees in 1864, having now risen to 95 lakhs of rupees.

10. Mr. Brandis' services have been acknowledged by the Government of India in the warmest terms. The *Gazette of India* of the 5th May 1883 contained the following Notification, dated the 1st idem:—

His Excellency the Governor General in Council desires to place upon public record his recognition of the eminent services rendered to the State by Mr. D. Brandis, Ph.D., C.I.E., Inspector General of Forests to the Government of India, who has left India with the intention of retiring from the service of Government.

Mr. Brandis has served in the Forest Department since January 1856, and has for the last nineteen years been Inspector General of Forests to the Government of India. During this long period he has laboured incessantly and successfully to perfect the organisation and working of the Department in all parts of the country, and under his able administration the Forest revenues have risen from 35 to 95 lakhs of rupees. The directions and instructions embodied in his numerous Inspection Reports and Reviews will, for many years to come, form the standard manuals for the practical guidance of Forest Officers. It is hoped that after his retirement Mr. Brandis will supplement the services he has rendered to the cause of Forest education in this country by assisting the Government at home to place the training of candidates for the superior staff of the Department upon a sound and permanent basis. The warmest thanks of the Government of India are due, and are hereby tendered, to Mr. Brandis.

## 2. RE-ORGANIZATION OF THE SUPERIOR STAFF.

11. During the year 1881-82 a re-organization of the superior staff of the Department has been worked out, and, although it did not come into force until the 3rd September 1882, it will be useful to indicate here the general lines of the new organization.

Apart from the appointment of Inspector General of Forests to the Government of India, the following staff has now been sanctioned:—

		Per mensem.	
		Rs.	
3	Conservators of Forests, 1st grade, on ...	...	1,500 each.
3	" " " 2nd " " ...	...	1,250 "
4	" " " 3rd " " ...	...	1,000 "
9	Deputy Conservators of Forests, 1st grade, on ...	...	900 "
9	" " " 2nd " " ...	...	800 "
17	" " " 3rd " " ...	...	650 "
17	" " " 4th " " ...	...	550 "
17	Assistant Conservators of Forests, 1st " " ...	...	450 "
17	" " " 2nd & 3rd grades, on ...	...	350 & 250 each, respectively.

		Per mensem.	
		Rs.	Rs.
1	Deputy Director of the Forest School, rising by annual increments of Rs. 40 from ...	700	to 900
1	Professor of Physical Sciences at the Forest School, rising by annual increments of Rs. 40 from ...	600	to 800
1	Deputy Superintendent of Forest Surveys, rising by annual increments of Rs. 40 from ...	600	to 800
1	Superintendent of Working-Plans, rising by annual increments of Rs. 40 from ...	600	to 800
	Allowance to the Director of the Forest School ...		200

or a total of 100 Officers arranged in the following classes:—

Conservators ... ..	10
Deputy Conservators, including Special Appointments	56
Assistant Conservators ... ..	34
	<hr/>
Total ... ..	100
	<hr/>

12. This staff has been arranged in five lists, namely—

- (1) Bengal—Assam.
- (2) North-Western Provinces and Oudh.
- (3) Punjab.
- (4) Central Provinces—Berar.
- (5) British Burma.

In addition there are six Special Appointments, which it was not considered necessary to include in any local list. The allotment of the entire staff is as follows :—

PROVINCES.	CONSERVATORS.	DEPUTY CONSERVATORS.				ASSISTANT CONSERVATORS.			GRAND TOTAL.
		1st and 2nd grades.	3rd grade.	4th grade.	Total.	1st grade.	2nd and 3rd grades.	Total.	
1. Bengal—Assam ...	2	3	4	3	10	3	4	7	19
2. North-Western Provinces and Oudh	3	3	3	4	10	4	3	7	20
3. Punjab ...	1	3	3	4	10	4	3	7	18
4. Central Provinces—Berar ...	2	3	4	3	10	3	4	7	19
5. British Burma ...	2	4	3	3	10	3	3	6	18
<i>Special Appointments.</i>									
Deputy Director of the Forest School ...	...	1	...	...	1	...	...	...	1
Professor of Physical Sciences at the Forest School.	...	...	1	...	1	...	...	...	1
Deputy Superintendent of Forest Surveys	...	...	1	...	1	...	...	...	1
Superintendent of Working-Plans	...	...	1	...	1	...	...	...	1
Officer in charge of the Coorg Forests ...	...	1	...	...	1	...	...	...	1
Assistant Comptroller General (or Assistant to the Inspector General of Forests)	...	1	...	...	1	...	...	...	1
Total ...	10	19	20	17	56	17	17	34	100

One officer of the North-Western Provinces and Oudh List will be attached to the Forest Survey Branch, and one officer of the British Burma List will be stationed in the Andamans.

13. The Rules regulating the appointment and promotion of Officers of the Forest Department will be found amongst the Appendices to this Review. First appointments to the superior staff are made by the Government of India; subsequent promotions up to and including Deputy Conservators of the 2nd grade are made by Local Governments. Promotion to the 1st grade of Deputy Conservators is, owing to their small number, given by the Government of India, who also appoint and promote all Conservators of Forests and the incumbents of the six Special Appointments.

The Superintendent of Forest Surveys and the Superintendent of Working-Plans are directly subordinate to the Inspector General of Forests. The Forest Survey Branch has been in full working order for some years past, but the Working-Plan Branch has yet to be developed.

### 3. SUBORDINATE STAFF.

14. The subordinate staff varies considerably according to the local requirements of the different provinces. With one or two exceptions, it has, however, now been recognized in all provinces that the most important measure of the immediate future is the creation of a staff of competent Forest Rangers, who, with the Sub-Assistant Conservators, will be the real executive officers of the Department. Hitherto the members of the superior staff had either to attend to the executive work, or to entrust it to a staff of low-paid and ill-educated Foresters. The former arrangement is too expensive, and the latter is even more objectionable, because the class of Foresters hitherto employed is not fitted



for the work on account of their imperfect knowledge and a want of trustworthiness in many instances.

In order to put forest management on a lastingly satisfactory footing, it is necessary to divide each of the hitherto very extensive Forest Divisions into a suitable number of Ranges of reasonable extent, each to be administered by a Forest Ranger or a Sub-Assistant Conservator.

#### 4. DEHRA DUN FOREST SCHOOL.

15. It has already been stated in last year's Review that the first course of theoretical instruction was held in the summer of 1881. The second course was similarly held from the 1st July to the end of October 1882, thirty-three students having taken part in it. Arrangements have now been made to receive annually thirty new students at the School, and it is hoped that in this manner a sufficient staff of Rangers will be trained within a reasonable period.

16. The conditions for the admission and training of candidates for the appointment of Forest Ranger at the Forest School will be found amongst the Appendices to this Review. The main points are that only men who have passed the entrance examination of an Indian University on the English side shall be admitted, and that they must have served for at least one year as Foresters before they join the School. In this manner a sufficient standard of education is ensured, while candidates have proved their fitness for forest work before they are permitted to attend the School. The students join on the 1st July and attend the lectures from that date until the 31st October; they are then employed on practical work from the 1st November to the 1st July following, either on ordinary executive work, or with the Working-Plan Branch. From the 1st July to the 31st October of the second year they attend a second course of lectures, and they can earn the Ranger's certificate at the end of 16 months. Students who do not come up to the required standard at the end of 16 months may, at the discretion of the Director of the School, be either relegated to their provinces without the Ranger's certificate, or retained for an additional year.

17. The instruction given during the theoretical courses may be seen from the following abstract:—

##### (1)—Forestry.

(a)—*First year's course*:—Objects and importance of Sylviculture. Structure, functions, and chemical composition of Plants. Climate. Soils.

(b)—*Second year's course*:—The struggle for existence. Classification of Indian Forests. Creation and regeneration of Forests.

Hereafter, it is hoped, some instruction in Working-Plans and Forest-Utilization will be added.

##### (2)—Botany.

(a)—*First year's course*:—Elements of structural and physiological Botany.

(b)—*Second year's course*:—Classification. Natural orders of the more important Indian Plants.

There are also weekly excursions and microscopic demonstrations.

##### (3)—Physical Science.

(a)—*First year's course*:—The principal subjects of *Physics* treated are:—Endosmose, gravity, specific gravity, transmission of sound, heat, the atmospheric air and its pressure, evaporation of water, the properties of light. Some instruction is also given regarding lenses, microscopes, telescopes, the magnetic needle,

the galvanic battery, and also regarding the various applications of electricity for purposes of signalling and the transmission of power.

In *Chemistry* the instruction extends to the more important gaseous and other elements and compounds required to understand the phenomena of vegetable life, and the action of soil, water, and air. Metals and their compounds, with reference to the nourishment of plants, and the components of soils and of the ashes of plants. Some idea is also given of the general constitution of organic compounds.

(b)—*Second year's course*:—*Mineralogy*, especially the most common and important minerals. The most important forms of crystallization; hardness, cleavage, chemical composition. Use of the blow-pipe.

*Geology*.—The different kinds of rocks, with special reference to composition and age. The Indian formations.

*Chemical Practice*.—The common re-actions of inorganic analysis. Analysis of various minerals and soils. Analysis of the ashes of woods, partly qualitative and partly quantitative.

(4)—Law.

Special Forest Law.

(5)—Mathematics.

Arithmetic, Geometry, Mensuration.

*Surveying*.—Up to the Lower Standard, comprising surveying with the chain, prismatic compass and chain, planetable and chain; levelling.

(6)—Entomology.

A general introduction into the subject and the more important natural orders.

18. Hitherto the want of a Manual of Sylviculture has been much felt, but good progress in the preparation of one has now been made, and it is expected that it will be roughly in print by the end of the current year. Mr. Baden-Powell's excellent Manuals on "Jurisprudence for Forest Officers" and "The Land Revenue Systems and Land Tenures of British India" have now been published, and they will be of the greatest use to all Forest Officers, as well as to others.

## 5. FUEL AND FODDER RESERVES.

19. Since the publication of the last Review, the question of the establishment of Fuel and Fodder Reserves has been further advanced by the Revenue and Agricultural Department of the Government of India, in consultation with the Forest Department. A Circular Resolution, No. 16A. of the 1st March 1883, has been issued by that Department, in which the attention of the Local Governments of Upper India [Punjab, North-Western Provinces and Oudh, Central Provinces, Berar] is drawn to the growing decrease in the area of grazing lands and wooded tracts in many parts of Upper India, as well as to their deterioration in quality and their change in character, the latter being partly due to the excessive grazing which the reduction in area has made necessary. It is pointed out that apparently at present the agricultural population will not, or cannot, themselves take sufficient precautions to provide against exceptional occurrences, and that they trust to accident or to assistance from Government. But, in a matter like this, little or no help can be afforded unless systematic arrangements are made in advance, and continuously maintained, under which a supply of fodder in a year of drought may be secured. The general outlines of the scheme which commends itself to the Government of India as most likely to secure the desired results, and which from

enquiries made appears likely to meet with the most general acceptance, are described as follow in the Resolution quoted above :—

The general control and administration of the measures with which this Resolution is concerned should, in the opinion of the Government of India, be primarily in the hands of the local officers, viz., the Commissioner, the District Officer, and his subordinates in charge of sub-divisions. The official channel through which the Local Government would communicate with the divisional and district officers would be the Agricultural Department, which would be responsible for providing the Government with advice and information, and for maintaining continuous action. The actual management of the lands set apart for the supply of fodder and fuel would be placed in the hands of Forest officials, who alone can be expected to establish and maintain without interruption a scientific system of treatment.

In order to satisfy the above conditions, it would be necessary, in each district or division in which operations are likely to be sufficiently extensive to require scientific management, that an officer of the Forest Department should, when financial circumstances admit of this being done, be placed under the orders of the district or divisional officer. He would work entirely under the orders of the Civil Officer, who would, however, refer questions of a professional or technical character for the advice of the chief Forest Officer of the Province or Circle. In many districts the necessary staff exists already, but in others new posts will have to be created.

It must not, however, be expected that arrangements can be made, financially or otherwise, under which every district or division can, in every part of the Upper Provinces in which the measure would be useful, be supplied with a separate Forest Officer for the work contemplated. It would, indeed, be extremely unwise to enter upon any expensive organisation until much more experience and information have been acquired. It is only, therefore, for those regions in which grazing lands are disappearing at a rapid rate, or in which history has shown that drought causes extensive destruction of cattle, that any application for the services of special officials could at present be entertained. It will probably be considered sufficient if at first a Forest official is attached as assistant to the Commissioner in one or two of the divisions in each province in which protection is most required.

In the meanwhile the serious duty will devolve upon the district officers of ascertaining how far the cattle need protection, and the extent of land, whether the property of Government or purchasable from land-owners at a reasonable price, which can be made available for fuel and fodder reserves. For this purpose an analysis of every district should be made by the local officials, which will show its need for protection against drought, and the extent to which land is available for fuel and fodder reserves. They may also be directed to enquire how land can be most advantageously secured for the required purposes in districts where a sufficient quantity of Government land is not available, how far the landholders themselves or Local Boards will be able to co-operate with the Government in the matter, and at what cost suitable areas can be procured.

The Agricultural Department will probably at present be most usefully employed in ascertaining by actual experiment, and in consultation with the Forest Department, what are the best means of bringing waste lands into a condition in which they can most economically provide a supply of fodder in a year of drought, and in what way they can in ordinary years be most profitably employed. The Department would also superintend, in correspondence with Commissioners, the analysis required by the preceding paragraph, and would review for the Local Governments the reports received from each Division. The same Department may also ascertain whether any system of stacking hay or storing fodder can be established, or whether it may not be useful to close grazing reserves for a portion of the year, especially when other fodder, such as the stubble of newly-reaped crops, is available. For if grass reserves are only thrown open when no other food is available, the grass will have the requisite opportunity to make head, and will thus provide a much more ample supply of fodder than if exposed continually to desultory grazing. Enquiries of this kind will fall within the scope of the Agricultural Department.

This Resolution is not the place in which the treatment of land required for conversion into fuel and fodder reserves can be considered in any detail. But the opportunity may be taken to give expression to the opinion of the Government of India that little real good can be effected unless the reserves are, at any rate for some years, brought under the control of Government, and systematically protected against the invasion of goats, cattle, and fire. It appears to be a matter susceptible of proof that a protected area will, besides giving security in a year of drought, afford over a certain number of years a considerably larger amount of fodder than an unprotected area of equal extent. It seems probable that the difference is sufficiently great to admit of a hope that fuel and fodder reserves can, in a large number of instances, be made financially successful.

The Resolution concludes as follows :—

If the conclusions indicated by the facts and arguments adduced in the preceding paragraphs can be accepted, the objection which has not unfrequently been brought forward to the occupation of grazing lands, on the score of the inconvenience suffered by the adjacent population in being deprived of their cattle pasture, is greatly diminished. The occupation is

only temporary. The inconvenience which is temporarily occasioned to the agricultural population is due to their own action in diminishing the efficiency of their grazing lands by an improper use of them. The Government proposes to do no more than restore, and, if possible, to increase, the efficiency which has been lost. The measure contemplated will, it is believed, result in a future supply of fodder which will be far larger and far more certain than that of which the owners of the cattle have been deprived. In this view it may be even found desirable to attach, for conversion into fuel and fodder reserves, land which has been broken up under the plough, but which as fodder reserves would be more profitable in preserving cattle from starvation, than in growing crops which are subject to failure in a year of drought.

## 6. FOREST LAW.

20. In continuation of the Indian Forest Act of 1878, special Acts for Burma and Madras have now been passed. In both instances the provisions of Chapter IV of the Indian Act, dealing with "Protected Forests," have been considerably altered. While the Indian Act admits two classes of demarcated forests (besides village forests)—namely, reserved forests and protected forests—both the Burma and Madras Acts recognize only one class of demarcated forest estates—namely, reserved forests—in which all rights have been duly inquired into, settled, and regulated, while the springing-up of new rights is made impossible. For the rest of the Government forests, provision is made to regulate their use, but no attempt is made to fix or settle rights. It will probably be necessary to recast Chapter IV of the Indian Act at no distant date, in order to prevent mischief, which may be caused by proceeding under it in order to avoid the more detailed provisions which have purposely been introduced by the Legislature into Chapter II, so as to provide not only for the thorough protection and management of the permanent Government forest estates, but also for the protection of the right-holders, who must be dealt with fairly and equitably by proceeding under Chapter II.

## CHAPTER II.—AREA AND BOUNDARIES.

### General.

21. The areas of the Government Forests with which the Forest Department is concerned stood as follow on the 1st April 1882:—

PROVINCE.	AREA, IN SQUARE MILES.				REMARKS.
	Reserved.	Protected.	Unreserved.	Total.	
Bengal ... ..	4,236	2,325	5,108	11,669	• 2,568 are first class, the rest are second class reserves.
North-Western Provinces and Oudh ...	3,328	98	85	3,509	
Punjab ... ..	1,160	311	3,323	4,794	
Central Provinces ... ..	19,430*	...	289	19,719	
British Burma ... ..	3,274	...	...	3,274	
Coorg ... ..	234	...	...	234	
Ajmere ... ..	122	...	...	122	
Assam ... ..	2,066	659	5,286	8,011	
	33,848	3,393	14,091	51,332	
Berar ... ..	1,394	...	3,030	4,424	
Biluchistan ... ..	...	...	26	26	
<b>Total</b> ... ..	<b>35,242</b>	<b>3,393</b>	<b>17,147</b>	<b>55,782</b>	
Madras ... ..	1,182	...	...	1,182	
Bombay ... ..	9,789	5,219	...	15,008	
<b>Grand Total</b> ... ..	<b>46,213</b>	<b>8,612</b>	<b>17,147</b>	<b>71,972</b>	

The area of Unreserved Forests has not been given in all instances, but it is hoped that the missing information will be supplied in future Reports.

22. The area of reserved forests in the Provinces under the Government of India has increased as shown below, since the passing of the Indian Forest Act in 1878 :—

Area on the 1st April	Year	Square miles.
1878	...	17,671
"	1879	31,602
"	1880	31,785
"	1881	33,141
"	1882	35,242

The increase during the last year amounted to 2,101 square miles, which took place in the following provinces :—

PROVINCE.	AREA OF RESERVED FORESTS, IN SQUARE MILES.	
	Increase during 1881-82.	Total on the 1st April 1882.
Bengal	825	4,236
North-Western Provinces and Oudh	13	3,326
Punjab	217	1,160
Central Provinces	...	19,430
British Burma	986	3,274
Coorg	1	234
Ajmere	...	122
Assam	51	2,066
Total	2,093	33,848
Berar	8	1,394
Grand Total	2,101	35,242

According to the law under which these areas have been reserved, they may be classified as follow :—

	Square miles.
Under the Indian Forest Act, 1878	29,580
Ditto Forest Act of 1865 and Act VII. of 1869	3,508
Ditto Local Rules, Hazara	236
Ditto ditto Ajmere	122
Ditto ditto Berar	1,394
Ditto Leases	402
Total	35,242

The above data do not agree with those given in previous Reviews, because the latter included only the first class reserves in the Central Provinces. In these provinces an area of 19,430 square miles was declared reserved forests in 1879 under Chapter II. of the Indian Forest Act of 1878; but as only part of this area is subjected to the intense management usually adopted in the case of reserves, it was divided into first and second class reserves. Only the former were entered in the statement of reserves; but as no difference exists between the two classes, as far as their legal status is concerned, the total area has now been entered, and the figures for past years have been corrected accordingly.

#### Bengal.

23. The progress of reservation in Bengal has been very rapid, as may be seen from the following data :—

Area of reserved forests on the 1st April	Year	Square miles.
1873	...	106
Ditto	1874	120
Ditto	1875	1,467
Ditto	1876	2,585
Ditto	1877	3,390
Ditto	1878	3,430
Ditto	1879	2,967
Ditto	1880	2,945
Ditto	1881	3,411
Ditto	1882	4,236

Eleven additional forests have been gazetted under section 4 of the Indian Forest Act, but their area is not known. It is expected that the work of reservation will be completed at an early date. The demarcation of the reserves has been completed in most divisions. No change has taken place in the area of protected forests, which remains at 2,325 square miles.

The examination of private forests in Chota Nagpore has been continued, with the view of bringing them under conservancy, but no definite proposals have yet been made. It will be interesting to follow this attempt to extend the benefits of systematic conservancy to the extensive private forest estates in that province.

#### North-Western Provinces and Oudh.

24. The areas have remained almost stationary, but considerable tracts are available for further extension of the Government forest areas under systematic management. In Banda 85 square miles have been taken up, and it is intended to increase this area to 120 square miles. The reservation of additional tracts in Gonda and Gorakhpur seems to be still pending, while much remains to be done in Tehri-Garhwal and in Bashahr.

The state of the boundaries has received attention during the year, but some demarcation remains to be done.

#### Punjab.

25. The work connected with reservation has been somewhat more satisfactory than in the previous year. 217 square miles have been added to the reserves, and the settlement of 320 square miles is reported as complete, while that of 380 square miles was in progress at the close of the year. On the whole, the area of reserves amounted only to 1,160 square miles, which is only a fraction of what is required for the welfare of the people and the requirements of the State.

26. No change has taken place in the area of the protected forests, which remains at 311 square miles. Some misapprehension still exists in the Punjab in regard to the object of protected forests, and there is a tendency of declaring areas which are permanently required for forests "protected" under Chapter IV of the Forest Act, instead of "reserves" under Chapter II. There can be no doubt that all areas permanently required as forests should be constituted reserves, and that only such areas should be gazetted under Chapter IV of the Act as protected forests regarding which it is as yet doubtful whether they will be wanted ultimately for the production of forest produce, but which require nevertheless a certain amount of protection in the meantime. Chapter IV does not make all the necessary provisions for the proper management of the permanent forest estates; and when once a detailed enquiry has been made into rights and other circumstances, it should be decided at once what areas shall be declared reserves, and what parts can be made available for cultivation or other purposes. No useful object can be gained by letting such lands pass through an intermediate stage as protected forests, thereby offering facilities for the acquisition of fresh rights. On the other hand, Chapter II of the Indian Forest Act has been so framed that Local Governments can make the protection of reserves as stringent or as lenient as may be required in each instance.

#### Central Provinces.

27. In the Central Provinces circumstances were favourable for the formation of reserves, as the areas at the disposal of Government had been declared free of rights at settlement. When the Forest Act had been passed in 1878, it was decided to declare all Government waste lands in the province reserved forests under Chapter II of the Act. Thus an area of 19,430 square miles was set aside permanently for forests. Having put the estates

on a satisfactory legal basis, arrangements were made to secure their greatest usefulness both to the people and the State. Certain areas, called first class reserves, which amount now to 2,588 square miles, were selected for more intense management, while the rest, called second class reserves, were set aside, under certain restrictions, for the supply of the ordinary requirements of the people. Gradually additional areas will be brought under more systematic management, while the effects of protection have been so marked that some of the first class reserves yield already large quantities of produce.

As regards the boundaries, much remains to be done, but it should be remembered that the area of the reserves is very considerable. A great effort has been made of late to expedite the work of demarcation.

#### British Burma.

28. The demarcation and settlement of reserves has again been pushed on most vigorously, an area of 986 square miles having been added to the previous reserves during the year. The progress during the last five years will be seen from the following data:—

				Square miles.
Area on the 1st April 1878	...	...	...	650
Do.	1879	...	...	1,410
Do.	1880	...	...	1,612
Do.	1881	...	...	2,288
Do.	1882	...	...	3,274

Of the total reserved area, 398 square miles are toungya areas—that is to say tracts in which, though forming part of the reserves, the people (Karens) are permitted to carry on toungya (temporary) cultivation. These blocks are all properly demarcated, and the arrangement has this great advantage that reservation keeps the indigenous people on the ground. The work has been done in a thorough manner, and the results are very satisfactory. On this subject the Chief Commissioner writes as follows:—

Great pains have been taken by the officers employed on forest demarcation to ascertain and sift the claims of the neighbouring inhabitants in respect of the forests proposed for reservation, and the claims put forward have been dealt with liberally and indulgently. Wherever the removal of villages from forest land has been found necessary, and such cases have been but few, the utmost consideration has been shown for the convenience of the people in fixing the time for moving, and compensation has been made on a generous scale for the trouble involved in shifting their dwellings. In many instances, the formation of a reserve is a direct benefit to the people, particularly Karens, living near it, who thereby obtain remunerative employment from the Forest Department. The Karens as a body no doubt dislike forest reservation, not because it brings them distinct hardships, but because it puts restraints on the boundless license they have been wont to enjoy.

And the Conservator of Forests of the Pegu Circle writes as follows:—

The Karens themselves say that once they were like jungle-fowls, hiding where they liked, scratching the earth here and there, and putting in a grain of rice and eating what came of it, if the nats (spirits) permitted; but that now the Forest Department put them into boundaries here and boundaries there, and that they feel like pigs in a pen. But after a certain time has elapsed they rarely deny that their latter state is preferable to their former, more especially in or near fire-traced reserves, where work is constantly obtainable. With the careful way in which enquiries are made, and privileges and rights granted, we have a right to expect such favourable results.

29. In this manner the most valuable forests in India, the Teak Forests of Burma, are at last being secured as permanent forest estates, without pressing upon the indigenous people of the country. The struggle has, however, been very prolonged, and successive Conservators have taken a share in it. It was commenced as early as 1856 by Mr. Brandis, supported by Colonel (now Sir Arthur) Phayre, and the obstacles in the way have only quite lately been overcome.

The work in the Pegu Circle is now far advanced, and its conclusion may be expected at an early date. In the Tenasserim Circle much more remains to be done, but here also no time is being lost in pushing on the work.

#### Ajmere.

30. The area taken under management as reserves has not been increased during the year, but enquiries have been set on foot with a view to secure an extension of the areas under forest conservancy at the time of the next settlement, which will be commenced in 1884. Experience has already shown the great benefits which Forest Conservancy is likely to bestow upon Ajmere and Merwara, and it is essential that the forest area should be increased until it is capable of yielding all the forest produce and the grazing required by the people, not only in ordinary years, but also in times of scarcity; in particular, it will be necessary to secure a sufficient area to provide fodder for cattle, as a safeguard against their being reduced by starvation and disease in years of drought, or to prevent the necessity of their being driven to other districts in such years.

#### Assam.

31. An area of 51 square miles was added to the reserves during the year, and it is reported that the reservation of several additional forests is in contemplation; it is satisfactory to notice that most of these forests are situated in districts which have as yet a small area of reserves. On the whole, the forests of Assam are very unevenly distributed over the province, one-half of the total area being situated in one district, Lakhimpur, while in others, like Nowgong, Kamrup, and Sylhet, only very small areas are available. The following statement, showing the distribution of the Government forests, may prove interesting:—

CIVIL DISTRICT.	AREA OF GOVERNMENT FORESTS, IN SQUARE MILES.		
	Within revenue limits.	Beyond revenue limits.	Total.
Goalpara	437	.....	437
Garo Hills	.....	351	351
Kamrup	129	.....	129
Nowgong	55	.....	55
Darrang	479	.....	479
Khasi and Jaintia Hills	50	100	150
Sibsagar	331	.....	331
Naga Hills	455	525	980
Lakhimpur	2,494	1,500	3,994
Sylhet	269	.....	269
Cachar	825	11	836
Total	5,524	2,487	8,011

Nearly one-third of the forests are at present beyond revenue limits, and consequently of little use; but, as civilization advances, these areas will no doubt become of value in the same degree as the private forests in the level and more accessible parts of the country disappear before the axe of the indigenous cultivator and of the tea planter.

#### Berar.

32. Of a total forest area of 4,424 square miles, 1,394 square miles have been definitely set aside as reserves. A re-classification of the remaining estates is now in progress, with the object of deciding what areas shall be maintained as forests, grass preserves, or grazing grounds, and what can be made available for the extension of cultivation. The areas permanently set aside for the production of wood, grass, and other forest produce have hitherto been classified as State Reserves, District Reserves, Rhamnas, Babul Bans, Grazing Grounds, &c. It will, however, be best to put all such lands on the same legal footing by



declaring them "reserves" under the proposed Forest Regulation, and to classify them according to their purposes in the rules to be passed under the Regulation. This plan would once for all put a limit on the further alienation of land and the acquisition of new rights, while any particular block may be set aside for the production of wood or grass, as may be required from time to time.

#### Biluchistan.

33. A commencement has been made to bring some lands in the vicinity of Sibi, measuring about 26 square miles, under forest conservancy. It is intended to extend operations considerably, especially with the view of securing a permanent supply of timber and fuel for the station of Quetta.

#### Leased Forests.

34. The area of leased forests, which is included under reserves, has been increased from 391 to 402 square miles.

The rent paid during the year, including payments to shareholders in forests managed by Government, is as follows :—

	Rs.
North-Western Provinces (Tehri-Garhwal) ... ..	13,498
Punjab (Bashahr, Chamba, Kalesar, Hazara, Kangra) ... ..	33,155
Berar (annual payment to Melghat Rajas) ... ..	17,120
Total ... ..	63,773

This amount compares as follows with those paid in the preceding four years :—

	Rs.
1877-78 ... ..	62,814
1878-79 ... ..	62,174
1879-80 ... ..	61,931
1880-81 ... ..	75,341
1881-82 ... ..	63,773

#### Cost of Demarcation.

35. The cost of demarcation will be seen from the following data :—

YEAR.	AREA OR RESERVES AT THE END OF THE YEAR, IN SQUARE MILES.	OUTLAY ON DEMARCA- TION, &C.
		Rs.
1877-78	17,671	38,389
1878-79	31,602	38,855
1879-80	31,785	45,299
1880-81	33,141	53,002
1881-82	35,242	50,490

As the culminating point in the addition of reserved areas is now past, the expenditure is likely to fall gradually, until it has reached the amount required to keep the boundaries clear and the boundary marks in repair.

## Compensation for Land and Rights.

36. The following sums have been expended during the last five years on account of compensation for land and rights :—

				Rs.
1877-78	...	...	...	6,508
1878-79	...	...	...	64,704
1879-80	...	...	...	4,610
1880-81	...	...	...	17,333
1881-82	...	...	...	84,342

About two-thirds of the total amount have been expended in Bengal.

## CHAPTER III.—SURVEYS AND WORKING-PLANS.

## Surveys.

37. The Forest Survey Branch has during the year under review been employed in the continuation of the survey of the forests in the Central Circle of the North-Western Provinces; detached parties were employed in Berar and in the Tons, Dehra Dun, Saharanpur, and Jaunsar Divisions of the North-Western Provinces.

The area plane-tabled amounted to 239 square miles on the 4-inch scale and 26 square miles on the 2-inch scale, against 260 square miles on the 4-inch scale in 1880-81. The cost per square mile plane-tabled during the year, including office expenditure, is given as Rs. 104, while the corresponding figures for the work in Kumaun and Garhwal were Rs. 118 in 1880-81 and Rs. 111 in 1879-80. The total cost of the Kumaun and Garhwal Survey stands now at Rs. 116 per square mile.

38. The survey of the forests in the Central and School Circles of the North-Western Provinces draws now to a close, and the work turned out may safely be pronounced of excellent quality. It is probable that the Survey Branch will next be employed in Berar, on the survey of the Melghat forests.

In Burma it has been arranged to survey the reserves in connection with the general topographical survey which is now in progress in that province.

## Working-Plans.

39. The Working-Plan Branch was during the year 1881-82 employed in the Naini Tal, Ranikhet, and Nandaur forests. The work extended over 34,371 acres, on which 1,550,304 trees were measured and classified. The description of blocks extended over 65,993 acres. Working-plans based on these data are now under preparation.

40. Hitherto this branch of the service was a provincial establishment. A Superintendent of Working-Plans has, however, now been sanctioned, and, beginning from the 1st April 1884, the branch will be Imperial. It is proposed to establish a central office, in connection with that of the Inspector General of Forests, where copies of all working-plans will be deposited, and where a check will be established to secure that the working of the forests is in accordance with the provisions of the working-plans. The Superintendent will visit the several provinces and set on foot provincial branches, whose duty it will be to carry out the actual work in the province concerned, under the orders of the Conservator, in accordance with general principles. In this way, a branch is already in existence in the North-Western Provinces, and a second branch established lately in Burma, will be brought into connection with the head-office. Eventually there should be a branch in each province.

41. The practice of drawing up annual plans of operations is now becoming universal, and with it a decided step in advance has been made; but complete continuity of work cannot be secured until working-plans have been prepared at any rate for all the more important forests.

## CHAPTER IV.—PROTECTION AND IMPROVEMENT.

### 1.—GENERAL PROTECTION.

42. The number of prosecutions for breaches of the forest law may be seen from the following statement:—

PROVINCES.	NUMBER OF PERSONS			PERCENTAGE OF ACQUITTALS TO PROSECUTIONS.
	Prosecuted.	Convicted or undertrial.	Acquitted.	
Bengal	230	200	30	13
North-Western Provinces and Oudh	1,024	876	148	14
Punjab	1,866	1,290	586	31
Central Provinces	1,242	1,079	163	13
British Burma	142	104	38	27
Coorg	73	31	42	58
Ajmere	283	238	45	16
Assam	89	48	41	46
Total	4,949	3,856	1,093	22
Berar	669	538	131	20
Biluchistan	10	6	4	40
Grand Total	5,628	4,400	1,228	22

The totals compare as follow with those of the previous four years:—

YEAR.	NUMBER OF PERSONS			PERCENTAGE OF ACQUITTALS TO PROSECUTIONS.
	Prosecuted.	Convicted or under trial.	Acquitted.	
1877-78	4,527	3,158	1,369	30
1878-79	4,435	3,458	977	22
1879-80	6,724	5,311	1,413	21
1880-81	6,467	4,593	1,874	29
1881-82	5,628	4,400	1,228	22
Average	5,556	4,184	1,372	25

These data show that, on the whole, the number of prosecutions is exceedingly small, and that it has fallen since 1879-80. The latter phenomenon is, however, explained by the fact that now a certain number of cases are compounded every year which do not appear in these statements. It is desirable that their numbers should be given in the provincial Reports. The percentage of acquittals to prosecutions varies considerably, from 13 per cent. in Bengal and the Central Provinces to 58 per cent. in Coorg, while the average is 22 per cent. in 1881-82, and 25 per cent. if calculated for the last five years. There are satisfactory signs from all parts of the country that the protection of the forests is steadily improving, and that the difficulties which were at first encountered in some parts are disappearing.

## 2.—PROTECTION FROM FIRE.

43. The results of fire protection on the areas under special protection during the year 1881-82 may be seen from the following table :—

PROVINCE.	AREA, IN SQUARE MILES.		PERCENTAGE OF FAILURES TO AREA ATTEMPTED.	COST, IN RUPRES.		YEAR WHEN FIRE CONSERVANCY COMMENCED.
	Attempted.	Actually protected.		Total.	Per square mile protected.	
Bengal ... ..	970	907	6	14,760	16	1872
North-Western Provinces and Oudh.	908	821	10	33,123	40	1872
Punjab ... ..	11	11	.....	551	50	1881
Central Provinces ... ..	1,413	1,209	14	13,750	11	1864
British Burma ... ..	181	178	2	11,367	64	1857
Coorg ... ..	192	73	62	1,417	19	1876
Ajmere ... ..	122	122	.....	639	5	1874
Assam ... ..	164	98	40	6,144	63	1873
Total ... ..	3,961	3,419	14	81,741	24	.....
Berar ... ..	936	864	8	4,671	5	1870
Grand Total ... ..	4,897	4,283	13	86,412	20	.....

The total results during the last five years were as follow :—

YEAR.	AREA, IN SQUARE MILES.		PERCENTAGE OF FAILURES TO AREA ATTEMPTED.
	Attempted.	Actually protected.	
1877-78 ... ..	3,243	2,723	16
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
Average ... ..	.....	.....	12

Owing to an unfavourable season, fire protection has not been so successful during the year under review as during the previous two years. In the Punjab special measures have only just been introduced, and the figures for Bengal are comparatively valueless, because areas have been included for which no special measures have been taken. The failures were most numerous in 1881-82 in Coorg and Assam, while success was greatest in Ajmere and British Burma. The cost of fire protection is smallest in Ajmere, Berar, and the Central Provinces, and it is highest in British Burma and Assam.

44. On the whole, the results are not quite as satisfactory as could be desired. According to the data for the last five years, each acre of forest under protection would on an average be overrun by fire once every eight or nine years, and although all the good done will not be undone again, still the accomplishment of the objects aimed at will be considerably delayed. It is true that areas can be stocked even if they are periodically overrun by fires, but it is obvious that the expenditure on account of protection must be much larger, and the time required very much longer. Moreover, even periodical fires will considerably reduce the quality of the material produced. On the whole, therefore, special efforts should be made to attain success by taking all possible precautions. In Bengal, for instance, the fire lines were in many instances not of sufficient breadth, and the staff did not in all cases come up to the required standard. From the Central Circle, in the North-Western Provinces, it is reported that 12,452 acres, out of 17,221 acres burnt, might have been saved by greater care on the part of the establishment. In British Burma 347 acres of plantations were burnt. From Assam it is reported that the causes of the fires were the inexperience of a new Divisional Officer in

the management of the Assam people, and mischief. From Berar it is reported that in six cases fires were caused by the carelessness of the establishment employed on line-burning.

Accidents are of course likely to happen under any circumstances, but it is essential that the chance of their occurring should be reduced to a minimum, and it is evident that it has not yet been possible to do this. Above all, the work must be systematically and carefully arranged, and only the most trustworthy members of the staff employed on it.

45. It has been repeatedly proposed to raise belts of evergreen trees along the boundaries, which would prevent fires running into the protected areas. This is no doubt a good idea, which should be carried out wherever evergreen trees will grow; but this is unfortunately not always the case. It is not, however, essential that the trees should be evergreen. Any trees grown close together along the boundary will help to keep the growth of grass down, and every effort should be made to stock the areas along the boundaries as rapidly as possible with any trees that will grow, and if these are evergreen so much the better.

### 3.—PLANTATIONS.

#### General.

46. The following statement exhibits the areas planted up to date and the expenditure incurred on them :—

PROVINCE.	AREA, IN ACRES.				EXPENDITURE, IN RUPRES.		
	At the commencement of the year.	Added during the year.	Excluded during the year.	At the close of the year.	During the year.	Total.	Per acre.
Bengal ... ..	1,207	798	...	2,005	15,410	1,13,865	57
North-Western Provinces and Oudh ... ..	2,811	519	...	3,330	8,620	51,834	16
Punjab ... ..	17,127	...	926	16,201	24,783	6,77,176	42
Central Provinces ... ..	...	...	...	...	...	...	...
British Burma ... ..	7,131	872	...	8,003	12,151	3,57,627	45
Coorg ... ..	328	109	...	437	6,072	48,715	111
Ajmere ... ..	410	3	...	413	4,244	41,037	99
Assam ... ..	1,107	44	...	1,151	17,728	89,749	78
Total ... ..	30,121	2,345	926	31,540	89,008	13,80,003	44
Berar ... ..	1,409	...	...	1,409	281	33,496	24
Biluchistan ... ..	...	13	...	13	327	327	25
Grand Total ... ..	31,530	2,358	926	32,962	89,616	14,13,826	43

As many of the plantations have already yielded considerable returns, it is obvious that the information regarding the cost is of comparatively little use, and it is hoped that future Reports will show both receipts and charges.

#### Bengal.

47. The planted areas are classified as—

	AREA, IN ACRES.	COST, IN RUPRES.	
		Total.	Per acre.
Regular plantations ... ..	1,215	1,00,185	82
Other cultural operations ... ..	790	13,680	17
Total ... ..	2,005	1,13,865	57

The regular plantations are again classified as—

	Acres.
Plantations of hill trees (Darjeeling) ... ..	435
Do. do. teak, tun, &c. (Kurseong, Chittagong) ...	705
Other plantations ... ..	25
Total	1,215

The plantations of hill trees in the Darjeeling District are the result of operations carried on to re-stock the areas cleared for the market, and this work will probably have to be continued, as the small extent of the area available for the supply of Darjeeling makes it extremely doubtful whether the system of natural reproduction, except as an accessory to planting, can be relied on. Natural reproduction, being according to present experience uncertain in those hills, requires more time than artificial reproduction, and it should be the special aim of the Department to re-stock at once the blocks cleared, so as to derive from the available area the highest possible yield of timber and fire-wood.

The teak plantations are experiments made with the object of introducing that valuable tree into Bengal, and they were commenced in 1868. It is not intended to extend materially those in the Kurseong Terai, as the area so far stocked is sufficient to test the suitability of the locality and of the climate. In Chittagong, on the other hand, which is, as far as latitude goes, within the natural limits of teak, it is intended to proceed with the planting of teak mixed with indigenous species.

The other cultural operations consist of plantings and sowings in the Kurseong and Buxa Divisions, chiefly with the view of stocking savannas along the boundaries of the sâl forests. The results are not yet quite satisfactory, but the work is of great importance, and it should be steadily continued.

#### North-Western Provinces and Oudh.

48. The planting operations are distributed in the following manner amongst the three Circles :—

CIRCLE.	AREA, IN ACRES.			COST, IN RUPEES.	
	At the beginning of the year.	Added.	At the end of the year.	Total.	Per acre.
Central ... ..	1,047	131	1,178	21,961	19
Oudh ... ..	563	228	791	9,459	12
School ... ..	1,201	160	1,361	20,414	15
Total ...	2,811	519	3,330	51,834	16

The plantations are situated partly in the hills and partly in the plains, and they are stocked with deodar, other conifers, oaks, walnut, sâl, sissu, khair, tun, other trees and bamboos; but it cannot be ascertained from the Reports what parts of the area are stocked with each of these species.

## Punjab.

49. The plantations are classified as follow :—

	AREA PLANTED, IN ACRES.			OUTLAY, IN RUPEES.	
	At the beginning of the year.	Added or excluded.	Total.	Total.	Per acre.
Regular plantations ... ..	15,428	+20	15,448	5,70,723	37
Rakh improvement ... ..	1,699	—946	753	1,06,453	141
Total ... ..	17,127	—926	16,201	6,77,176	42

The decrease in the area is due to the exclusion of unstocked areas.

The following operations may be specially mentioned :—

At Subathu, the sowing of 20 acres with chil.

In the Pabbi reserve, the re-sowing of 200 acres.

At Kalatop, the planting out of 6,425 deodar seedlings.

In Kulu, the sowing and planting of 90 acres with deodar.

In Bashahr, the sowing of 206 acres with deodar.

In Kot Lakhpat, the re-sowing of 140 acres with jhand, reru, and ber.

50. The object of planting at the Military Cantonment of Subathu is to secure a supply of timber and fuel for that station.

The work in the Pabbi reserve has been mentioned in previous Reviews. The reserve is situated on dry hills intersected by ravines and torrents. In 1877-78 an area of about 1,300 acres was fenced, all natural growth protected, and various trees, especially *Dodonaea viscosa* and *Acacia modesta*, planted in plots; at the same time the worst ravines were treated with fascines, dams, and dykes, and the silt belts formed above them were sown and planted. The results were at first encouraging, but subsequently, it appears, cattle got in and the damage done to the works was not repaired, so that there was hardly anything to show in 1881. Accordingly a fresh start was made during the year under review on a smaller area, 200 acres. The dams and dykes were systematically repaired and additional ones constructed, seed was largely sown in a variety of ways, and, as a matter of course, steps were taken to exclude cattle absolutely. The results are described as fairly successful, but there can be no doubt that success is not easy to obtain owing to the small and uncertain rainfall.

In Kalatop over 100,000 deodar trees have now been planted, and the results are described as very satisfactory.

The sowings and plantings in Kulu and Bashahr were made to augment natural reproduction, especially to fill up blanks. Those in Kulu are described as very successful.

At Changa Manga blanks were filled up to a considerable extent. That plantation is now being worked regularly, and it yields a considerable revenue every year.

## Central Provinces.

51. Although no areas have been entered in the statement given in paragraph 46, a considerable amount of planting has been done. No doubt reproduction is attained chiefly by protection, and planting and sowing are only resorted to in exceptional cases to supply special demands and to improve the composition of the forests; but it appears worthy of consideration whether the success of fire-protection would not in many instances be increased by planting up areas now covered with grass at or near the boundaries, or in the middle, of the protected blocks, where a sufficient number of seed-bearing trees is not available. If in these cases the re-stocking is left to nature, very long periods must ordinarily elapse before any appreciable good can be effected; and the planting of strips or plots with suitable trees appears a measure which might well be considered by the Department.

## British Burma.

52. The plantations are classified as follow :—

	AREA PLANTED, IN ACRES.			OUTLAY, IN RUPEES.	
	At the beginning of the year.	Added during the year.	Total.	Total.	Per acre.
Regular plantations ... ..	3,544	20	3,564	3,18,411	89
Toungya do. ... ..	3,587	852	4,439	39,216	9
Total ... ..	7,131	872	8,003	3,57,627	45

The system of plantations carried on by departmental agency has now been abandoned for the system of toungya teak cultivation. The average number of teak seedlings growing in the new teak toungyas at the close of the year amounted to more than 600 per acre, which, with other trees likely to spring up gradually, is a sufficiently dense stocking of the ground. The expenditure incurred on these plantations is very low, and the results are certainly very satisfactory.

53. The Conservator of Forests of the Pegu Circle took advantage of the flowering of bamboos, and planted, at an average cost of Rs. 5 per acre, an area of 450 acres in the Bwet and Nyanleh reserves, on which the dead bamboos had been burnt.

Experimental catch plantations have been made in the Bawbin and Bwet reserves, and it may be practicable to extend the toungya system to them. The first step, however, must be the formation of catch reserves.

## Assam.

54. The cultural operations are shown in the following statement :—

	AREA PLANTED, IN ACRES.			COST, IN RUPEES.	
	In previous years.	Added during the year.	Total.	Total.	Per acre.
Regular plantations ... ..	1,093	20	1,113	87,012	78
Other cultural operations ... ..	14	24	38	2,737	72
Total ... ..	1,107	44	1,151	89,749	78

As regards species, the area is distributed as follows :—

Caoutchouc plantations .	...	...	...	912
Teak do. ... ..	...	...	...	170
Other do. ... ..	...	...	...	31
Sowings of Nahor and Ajhar ... ..	...	...	...	38
Total ... ..	...	...	...	<u>1,151</u>

55. With the exception of the caoutchouc plantations, the operations are as yet in the experimental stage. There is very little difference between the cost of regular plantations and the more rough system of cultivating nahor and ajhar in the Nambor forest, which circumstance requires investigation. The area planted with teak has been extended by 20 acres, but no extension of the caoutchouc plantations has been made during the year, owing to the plants being now kept in the nurseries until they are 10 feet in height. At the close of the year the nurseries in the Charduar reserve contained 176,249 caoutchouc seedlings ranging from a few inches up to 10 feet in height.



## 4.—COMMUNICATIONS AND BUILDINGS.

56. The following table shows the outlay under this head during the year :—

PROVINCE.	COMMUNICATIONS AND BUILDINGS.—A VII.			
	Roads and Bridges.	Buildings.	Other works.	Total.
	Rs.	Rs.	Rs.	Rs.
Bengal ... ..	25,986	6,805	3	32,794
North-Western Provinces and Oudh ... ..	41,499	45,561	3,855	90,915
Punjab ... ..	5,465	4,764	66	10,295
Central Provinces ... ..	849	2,409	1,889	5,147
British Burma ... ..	1,106	13,154	2,519	16,779
Coorg ... ..	353	437	2	792
Assam ... ..	4,715	14,803	84	19,602
Ajmere ... ..	.....	121	.....	121
Surveys ... ..	.....	.....	.....	.....
Total ... ..	79,973	88,054	8,418	1,76,445
Berar ... ..	9,771	1,533	278	11,582
Grand Total ... ..	89,744	89,587	8,696	1,88,027

The totals compare with those of the previous four years as follow :—

	Rs.
1877-78 ... ..	1,11,779
1878-79 ... ..	1,21,822
1879-80 ... ..	1,66,193
1880-81 ... ..	1,38,324
1881-82 ... ..	1,88,027

Average per annum ... 1,45,229

57. Nearly one-half of the expenditure of 1881-82 was incurred in the North-Western Provinces and Oudh, in the construction of 188 miles of new forest roads and of a number of rest-houses. The main building of the Forest School at Dehra Dun has now been completed, but the construction of students' quarters has not yet been commenced.

On the whole, the opening out of the forests and the construction of rest-houses for the convenience of the staff continue to receive attention. Both are important subjects, which help to secure the financial and general success of the operations of the Department.

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

58. The expenditure under these heads will be found in the subjoined table :—

PROVINCE.	COMMUNICATIONS AND BUILDINGS—A VII., IN RUPES.	DEMARCATION AND IMPROVEMENT OF FORESTS—A VIII., IN RUPES.						GRAND TOTAL, IN RUPES.	
		Demarcation.	Compensation for land and rights.	Surveys and working-plans.	Plantations.	Protection from fire.	Other works.		Total.
Bengal ...	32,794	6,857	15,361	174	15,410	11,385	572	49,759	82,553
North-Western Provinces and Oudh ...	90,915	9,416	10,337	3,376	8,797	31,023	8,728	71,677	1,62,592
Punjab ...	10,295	10,185	1,734	93	24,784	706	1,748	39,250	49,545
Central Provinces	5,147	871	...	966	4,662	13,307	3,883	23,689	28,836
British Burma	16,779	12,835	2,642	8,886	19,747	10,824	5,999	60,933	77,712
Coorg ...	792	869	47	753	6,072	1,261	...	9,002	9,794
Assam ...	19,602	7,462	185	4,729	16,032	6,500	8,090	42,998	62,600
Ajmere ...	121	8	...	...	4,244	606	270	5,128	5,249
Surveys ...	...	...	...	6,092	...	...	...	6,092	6,092
Total ...	1,76,445	48,503	30,306	25,069	99,748	75,612	29,290	3,08,528	4,84,973
Berar ...	11,582	1,987	4,036	1,967	359	4,570	1,002	13,921	25,503
Grand Total ...	1,88,027	50,490	34,842	27,036	1,00,107	80,182	30,292	3,22,449	5,10,476

The totals compare as follow with those of the previous four years :—

YEAR.		COMMUNICATIONS AND BUILDINGS.	DEMARCATION AND IMPROVEMENT.	TOTAL.
		Rs.	Rs.	Rs.
1877-78	...	1,11,779	2,42,962	3,54,741
1878-79	...	1,21,823	2,98,962	4,20,784
1879-80	...	1,66,193	2,55,647	4,21,840
1880-81	...	1,38,324	2,66,925	4,05,249
1881-82	...	1,88,027	3,22,449	5,10,476
Average per annum ...		1,45,229	2,77,389	4,22,618

## CHAPTER V.—YIELD AND FINANCIAL RESULTS.

### General.

59. Statement I appended to this Review shows the Receipts and Charges of the Department in the provinces immediately under the Government of India; Statement II gives the same data arranged under the main heads of Receipts and Charges; and Statement III exhibits the financial results of the Forest Department throughout India, including Madras and Bombay.

60. The following abstract shows the Receipts and Surplus of the various provinces arranged according to the total amount of Revenue :—

PROVINCE.	TOTAL REVENUE.	SURPLUS.	DEFICIT.	PROPORTION OF SURPLUS TO GROSS REVENUE, IN PER CENT.
	Rs.	Rs.	Rs.	
British Burma	22,31,803	10,81,581	...	48
Bombay	18,28,089	6,79,631	...	37
Central Provinces	11,72,884	6,75,871	...	58
North-Western Provinces and Oudh	10,66,094	1,49,882	...	14
Punjab	6,88,308	1,72,038	...	25
Bengal	6,33,734	2,39,125	...	38
Madras	5,06,710	1,15,524	...	23
Berar	2,33,511	80,526	...	34
Assam	1,66,053	692	...	0.4
Coorg	1,00,364	40,506	...	40
Biluchistan	18,617	936	...	5
Ajmere	4,066	...	9,888	...
Forest Survey	...	...	42,489	...
Total	86,50,233	31,83,935	...	37

It will be noticed that Burma stands first as regards the gross and net revenue, while of the seven great provinces, Madras stands last. As regards the proportion of surplus to gross revenue, the Central Provinces come first of the seven great provinces with 58 per cent., then Burma with 48, Bengal 38, Bombay 37, Punjab 25, and Madras 23, while the North-Western Provinces and Oudh stand last with 14 per cent.

Leaving the Survey Branch out of consideration, Ajmere is the only province which has worked with a deficit, and from which no surplus can be expected for some years to come. Assam has narrowly escaped showing a deficit.

61. The total financial results of the Forest Department in India during the last 19 years, rounded off in lakhs of Rupees, are as follow :—

YEAR.	RECEIPTS.	CHARGES.	SURPLUS.	PROPORTION OF SURPLUS TO RECEIPTS, IN PER CENT.
	In lakhs of Rupees.			
1864-65 to 1868-69 (average per year)	36	22	14	39
1869-70 to 1873-74 (ditto)	55	38	17	31
1874-75 to 1878-79 (ditto)	64	43	21	33
1879-80	68	45	23	34
1880-81	71	46	25	35
1881-82	87	55	32	37
1882-83 (latest figures)	95	60	35	37

The revenue has risen steadily from 36 lakhs to 95 lakhs during the last 19 years, and one-half of this rise has taken place during the last five years, which seems to indicate that the effect of forest conservancy on the balance sheet of the Department is becoming more pronounced every year.

The surplus has risen in almost exactly the same proportion from 14 lakhs to 35 lakhs, but as much as two-thirds of this increase has occurred during the last five years. This is all the more satisfactory, as a very much larger sum is now spent annually on the formation, protection, and improvement of the forests than was the case in the earlier years of forest conservancy.

62. The surplus revenue, arranged according to Presidencies, and excluding the non-British provinces of Berar and Biluchistan, has been as follows during the last four years :—

YEAR.	NAME OF PRESIDENCY.			TOTAL.
	Bengal.	Madras.	Bombay.	
	Rs.	Rs.	Rs.	Rs.
1878-79	12,29,982	41,890	1,82,732	14,54,604
1879-80	15,96,541	—15,478	4,68,399	20,49,462
1880-81	18,29,876	1,49,835	4,07,711	23,87,422
1881-82	23,07,318	1,15,524	6,79,631	31,02,473

## Bengal.

63. The quantities of timber and fuel removed from the forests by Government agency during the year are as follow, compared with those of previous years :—

YEAR.						TIMBER.	FUEL.
						Cubic feet.	Cubic feet.
1878-79	...	...	...	...	...	78,082	392,472
1879-80	...	...	...	...	...	100,017	339,492
1880-81	...	...	...	...	...	110,556	340,249
1881-82	...	...	...	...	...	111,428	397,775
Average						100,021	365,997

64. The quantities removed by private parties during the year under review are given in various measures, so that a comparison is difficult, but it appears that they were approximately as follow :—

Timber	...	...	...	5,000,000 cubic feet.
Fuel	...	...	...	8,000,000 maunds.

Accordingly the departmental operations extend over about 1-50th part of the timber and about 1-40th part of the fuel extracted.

65. Next to timber and fuel, the most important items are bamboos, canes, grass, and golpatta (leaves of *Phoenix paludosa*), of which the following quantities were removed during the year :—

Bamboos	...	...	...	17,673,870 pieces.
Canes, about	...	...	...	3,800,000 „
Grass, „	...	...	...	5,000,000 bundles.
Golpatta	...	...	...	3,094,052 maunds.

66. The financial results of the year, arranged under the main heads of Receipts and Charges, are as follow :—

		RECEIPTS.	CHARGES.	SURPLUS.	DEFICIT.
		Rs.	Rs.	Rs.	Rs.
Departmental timber and fuel operations	...	1,88,807	1,58,181	32,716	.....
Other revenue	... ..	4,44,837	1,12,160	3,32,677	.....
Formation, improvement, and protection	...	.....	1,26,268	.....	1,26,268
Total	...	6,33,734	3,94,609	2,39,125	.....

Taking into consideration the data given above, it appears that the departmental operations were at least four times as profitable as the disposal of produce to purchasers in the forests.

67. The following table shows the distribution of the receipts and charges amongst reserved, protected, and open forests :—

	AMOUNTS CREDITED AND DEBITED TO THE FOREST DEPARTMENT.			AREA UNDER THE MANAGEMENT OF THE FOREST DEPARTMENT.	REVENUE PER SQUARE MILE.	
	Receipts.	Charges.	Surplus.		Gross.	Net.
	Rs.	Rs.	Rs.		Square miles.	Rs.
Reserved forests ... ..	5,50,514	3,71,052	1,79,462	4,236	130	42
Protected forests ... ..	19,575	10,069	9,506	1,925	10	5
Open and private forests ... ..	63,645	13,488	50,157	5,108	12	10
Total ... ..	6,33,734	3,94,609	2,39,125	11,269	56	21

These data leave no doubt that the formation of reserves has resulted in a great improvement of the receipts from the Government forest estates. In fact, the increase in the receipts has kept pace with that in the area of reserves, as will be seen from the following table :—

YEAR.				RECEIPTS.	CHARGES.	SURPLUS.	AREA OF RESERVES.
				Rs.	Rs.	Rs.	Square miles.
1872-73	...	...	...	1,16,751	73,581	43,170	106
1873-74	...	...	...	1,16,633	85,488	31,145	120
1874-75	...	...	...	1,85,933	99,403	86,530	1,467
1875-76	...	...	...	1,98,274	1,39,086	59,188	2,585
1876-77	...	...	...	2,22,401	2,11,689	10,712	3,390
1877-78	...	...	...	4,26,228	2,61,211	1,65,017	3,430
1878-79	...	...	...	4,16,024	3,38,671	77,353	2,967
1879-80	...	...	...	4,49,524	2,75,748	1,73,776	2,945
1880-81	...	...	...	5,61,340	3,35,381	2,25,959	3,411
1881-82	...	...	...	6,33,734	3,94,609	2,39,125	4,236

#### North-Western Provinces and Oudh.

68. It has not been possible to give the data representing the yield of the forests in a uniform manner for all three Circles. Under these circumstances, it will suffice to recapitulate here a few of the main facts.

The following table exhibits the trees cut by departmental agency, according to selection fellings :—

CIRCLE.	NUMBER OF TREES CUT.			ESTIMATED CONTENTS, IN CUBIC FEET.
	4' 6" in girth and over.	Under 4' 6" in girth.	Total.	
Central ... ..	8,061	18,003	26,064	427,563
Oudh ... ..	3,160	...	3,160	146,204
School ... ..	2,163	98	2,261	427,715
Total ... ..	13,384	18,101	31,485	1,001,482

This gives an average of 32 cubic feet per tree all round. As regards species, the trees may be classed as follow :—

Circle.	Sal.	Asna.	Sissu.	Deodar.	Other conifers.	Oak.	Box.	Miscellaneous.	Total.
Central ...	2,534	3,253	...	861	3,105	247	330	15,734	26,064
Oudh ...	2,528	101	531	...	...	...	...	...	3,160
School ...	...	...	...	1,289	460	372	98	42	2,261
Total ...	5,062	3,354	531	2,150	3,565	619	428	15,776	31,485

69. Two small shipments of boxwood, comprising in all about 40 tons, were made during the year. The prices realised resulted in so small a surplus that this in itself would not be sufficient to encourage the cultivation of the tree. It is, however, desirable to make further shipments, and to try the market fully, before a definite line of policy with regard to box is decided on.

70. The financial results compare as follow with those of the previous four years :—

Year.	Receipts.	Charges.	Surplus.
	Rs.	Rs.	Rs.
1877-78 ...	12,03,108	7,28,225	4,74,883
1878-79 ...	11,26,755	8,09,977	3,16,778
1879-80 ...	10,39,966	7,16,594	3,23,372
1880-81 ...	9,42,229	6,79,574	2,62,655
1881-82 ...	10,66,094	9,16,212	1,49,882

The deterioration of the financial balance sheet, which has taken place during the last few years, has now reduced the surplus to less than one-third of what it was in 1877-78. The figures for 1881-82 are made up as follow in the several Circles :—

Circle.	Receipts.	Charges.	Surplus.	Deficit.	Surplus in 1880-81.
	Rs.	Rs.	Rs.	Rs. <sup>1</sup>	Rs.
Central ...	5,04,038	3,04,893	1,99,145	...	1,95,170
Oudh ...	3,11,145	2,24,506	86,639	...	64,944
School ...	2,50,911	3,86,813	...	1,35,902	2,541
Total ...	10,66,094	9,16,212	1,49,882	...	2,62,655

There was a slight improvement in the Central and Oudh Circles during the year, but in the School Circle the falling-off in the net results amounted to Rs. 1,38,443. This is accounted for by the final adjustment of Messrs. Winton and Braidwood's account with the Department, the total sum paid to that firm on account of the purchase of 165,552 cubic feet of converted timber being given as Rs. 2,00,586. Without this transaction the surplus would have amounted to about 3½ lakhs of rupees.

71. Arranged under the main heads of Receipts and Charges, the financial results present the following aspect:—

YEAR.	I. DEPARTMENTAL TIMBER OPERATIONS.			II. OTHER REVENUE.			III. FORMATION, PROTECTION, AND IMPROVE- MENT OF FORESTS.
	Receipts.	Charges.	Surplus or Deficit.	Receipts.	Charges.	Surplus.	Charges.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
1879-80 ... ..	6,35,714	3,47,201	+2,88,513	4,04,252	1,07,648	2,96,604	2,61,745
1880-81 ... ..	4,40,358	3,20,292	+1,20,066	5,01,871	1,34,145	3,67,726	2,25,137
1881-82 ... ..	4,29,730	5,15,975	-86,245	6,36,364	1,61,278	4,75,086	2,38,959
Average of 3 years ...	5,01,934	3,94,489	+1,07,445	5,14,162	1,34,357	3,79,805	2,41,947

Considering that the value of timber and fuel in depôts at the end of 1881-82 appears to have been somewhat greater than in the beginning of 1879-80, the results of the departmental timber operations are not unsatisfactory. It has, however, been recognized in the Central and School Circles that such operations are less profitable than the disposal of the timber to purchasers in the forests. In the School Circle certain departmental works must be continued for purposes of instruction, but, with this exception, there seems to be no objection to reduce departmental timber operations as soon as satisfactory arrangements can be made to sell the material *in situ*.

The financial results of the working of the three hill divisions of Naini Tal, Ranikhet, and Jaunsar are not satisfactory. It would appear either that the expenditure is too high, or that the timber and firewood are sold at too low rates.

72. Regarding the comparative value of departmental working, and the removal of produce by purchasers, the Conservator of Forests, Central Circle, gives the following information:—

Particulars.	Receipts.	Charges.	Surplus.	Deficit.
	Rs.	Rs.	Rs.	Rs.
I.—Departmental timber operations ... ..	1,77,828	1,49,834	27,994	...
II.—Other revenue ... ..	3,26,209	64,647	2,61,562	...
III.—Formation, protection, and improvement of the forests... ..	...	90,412	...	90,412
Total ... ..	5,04,037	3,04,893	2,89,556	90,412

The quantities of timber and other produce worked out by Government agency compare as follow with those removed by purchasers:—

Description of material.	Removed by Government agency.	Removed by private parties.
Timber ... .. C. ft.	179,125	538,092
Fire-wood and charcoal ... .. Mds.	159,144	168,643
Other items, as bamboos and grazing and fodder grass, &c. ... .. Rs.	7,294	128,359

Deducting the last two items from the surplus given in the statement preceding the above table, the financial results, as regards the removal of timber and fire-wood, may be represented as follows :—

	MATERIAL REMOVED.		SURPLUS OF RECEIPTS OVER CHARGES.
	Timber.	Fire-wood.	
	C. ft.	Mds.	Rs.
Government agency ... ..	179,125	159,144	20,700
Private enterprise ... ..	538,092	168,643	1,33,203

Whilst the amount of timber removed by private enterprise is only three times as much as that sold by Government agency, and the amount of fire-wood and charcoal very nearly the same in either case, the surplus of receipts over charges from private enterprise is very nearly seven times as much as the surplus from Government agency.

### Punjab.

73. The departmental timber operations seem to have been conducted on a somewhat larger scale than in the previous year, the figures being as follow :—

	1880-81. Cubic feet.	1881-82. Cubic feet.	Increase. Cubic feet.
Timber received during the year ...	496,676	543,405	46,729
Timber sold during the year ...	476,208	578,940	102,732

On the other hand, the quantity of firewood removed from the forests by purchasers has fallen off by about  $3\frac{1}{2}$  millions of cubic feet.

74. The total quantity of material removed from the forests by Government agency, by purchasers, and under free grants is as follows :—

Description of Produce.	1880-81.	1881-82.	Increase.	Decrease.
Trees and poles ... .. No.	56,693	58,507	1,874	...
Fire-wood ... .. C. ft. stacked	5,958,158	2,169,962	...	3,788,196
Charcoal ... .. Mds.	6,497	18,872	12,375	...
Bamboos ... .. Pieces.	685,271	596,377	...	88,894
Coal ... .. Tons.	4,157	4,292	135	...

75. The quantity of timber imported from foreign territory is somewhat smaller than the amount imported during the previous year, the figures being as follow :—

Year.	Logs.	Sleepers.
1880-81 ... ..	54,282	270,021
1881-82 ... ..	23,389	307,929
Decrease ... ..	30,893	...
Increase ... ..	.....	37,908

76. The financial results compare as follow with those of previous years :—

Year.	Receipts.	Charges.	Surplus.	Deficit.
	Rs.	Rs.	Rs.	Rs.
1877-78 ... ..	6,83,710	5,17,166	1,66,544.	.....
1878-79 ... ..	5,00,620	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 ... ..	6,86,308	5,16,270	1,72,038	.....
Average ... ..	6,85,827	5,06,007	1,32,220	.....



Owing to the expenditure having risen more than the receipts, there is a slight falling off in the surplus: at the same time the financial results of the past year are more favourable than the average of the last five years.

Central Provinces.

77. The following table shows the financial results of the departmental timber operations during the last five years:—

Year.	Receipts.	Charges.	Surplus or Deficit.
	Rs.	Rs.	Rs.
1877-78 to 1880-81	4,70,742	5,35,878	-65,136
1881-82	3,10,176	1,38,313	+1,71,863
Total	7,80,918	6,74,191	+1,06,727

Departmental timber operations are carried on in the Banjar and Ahiri reserves. Both forests are situated at considerable distances from the markets; moreover, part of the material removed of late years consisted of old timber found lying in the forests, while another part of the material was bought from private owners for conversion, in order to keep the Allapilli saw-mill fully employed. All the timber felled in the Government forests was removed more for the purpose of encouraging the growth of young teak than with the view of any great profit. Under these circumstances, the results are not unsatisfactory. Material which would otherwise not have been brought to market has been made use of, and at the same time a small surplus was realized, which is due to the economical way in which the operations have been conducted. When the rivers used for floating timber have been opened out and roads constructed, the net revenue derived from these forests will no doubt considerably increase.

78. The financial results, arranged according to first and second class reserves, are as follow:—

	RECEIPTS.	SURPLUS.	AREA, IN SQUARE MILES.	REVENUE PER SQUARE MILE.	
				Gross.	Net.
				Rs.	Rs.
First class reserves	4,15,679	1,60,149	2,588	161	62
Second ditto	7,57,205	5,15,722	16,842	45	31
Total	11,72,884	6,75,871	19,430	60	35

It will be noticed that the first class reserves yielded double the net revenue per square mile of the second class reserves.

79. On the whole, the receipts have steadily risen for years past, and of late the first class reserves have considerably contributed towards this end. The following is an abstract of the financial results for the last 12 years, arranged in periods of three years:—

Year.	Receipts.	Surplus.	Proportion of Surplus to Receipts, in per cent.
	Rs.	Rs.	Rs.
1870-71 to 1872-73, average per year	5,29,186	2,66,869	50
1873-74 to 1875-76 ditto	6,51,827	3,35,641	51
1876-77 to 1878-79 ditto	7,32,699	3,99,355	55
1879-80 to 1881-82 ditto	10,09,915	5,04,882	50

It is satisfactory to notice that the proportion between surplus and receipts has not fallen off.

## British Burma.

80. The following trees were girdled during the year:—

Teak trees	...	...	...	...	18,850
Other trees	...	...	...	...	5,359
				Total	24,209

Only 200 teak trees were girdled in the reserves, the remainder being obtained from the unreserved forests. It is reported that about 30,000 teak trees fit for girdling remain in the unreserved forests, so that all girdling operations will have to be carried on in the reserves at the end of two years.

81. As far as it has been possible to combine the figures of the two Circles, the following data represent the outturn of the year:—

	TIMBER EXTRACTED, IN TONS.		
	Teak.	Other timber.	Total.
By Government agency	29,615	20,902	50,517
Under trade permits	...	23,277	23,277
Do. free permits	...	42,413	42,413
In other ways	1,631	579	2,210
Total	31,246	87,171	118,417

The outturn of teak has risen from 22,253 tons in 1880-81 to 31,246 tons in 1881-82, and the quantity of timber of other kinds is nearly double that brought to market in the previous year.

On the other hand, 176,000 catch trees (*Acacia Catechu*) were cut during the year, as against 436,500 cut in the year 1880-81. This great falling-off is said to be due to the supply outside the reserves being nearly exhausted; but it is possible that the raising of the fee from Rs. 10 to Rs. 20 per cauldron may have influenced the manufacture of the article. Under any circumstances, it seems clear that the stock of catch trees available is not sufficient to maintain the outturn of the last few years, and a reduction in the quantity of catch brought to market seems unavoidable, until protection and reproduction have replaced the trees lately removed from the forests. Steps should, therefore, be taken, without delay, to constitute a sufficient area of catch reserves.

82. The trade in teak in the province during the last four years is exhibited in the following statement:—

YEAR.	IN TONS OF 50 CUBIC FEET.			
	Yield of Government forests in British Burma.	Imports from Foreign territory.	Total.	Export from Rangoon and Moulmein to Indian and other ports.
1878-79	22,763	170,610	193,373	133,820
1879-80	17,585	157,280	174,865	121,161
1880-81	22,253	124,618	146,871	151,274
1881-82	31,246	154,290	185,536	133,751
Average per year	23,462	151,694	175,156	135,001

All these figures exhibit a good deal of fluctuation, which is caused by the state of the market, more or less favourable floods in the rivers, and the

number of trees girdled in previous years. During the last four years the British forests yielded 13 per cent. of the total quantity of teak brought into the market, and the forests beyond the frontier 87 per cent. Of the total output, 23 per cent. were consumed in Burma, while 77 per cent. were exported to India and to other countries.

83. The timber merchants of Moulmein having represented that the duty levied at Moulmein on foreign timber put them at a disadvantage as compared with the timber merchants of Rangoon, and that the principle of levying it is indefensible, the duty was reduced from 7 per cent. *ad valorem* to 1 per cent., and it has since the close of the year been further reduced to  $\frac{1}{2}$  per cent., which amount is considered sufficient to cover the expenses imposed on Government by the control of the timber in transit. A few months' experience seems to have shown that the benefit of these reductions is appropriated by the owners of the timber in the Foreign States, while the merchants of Moulmein have failed to realize the advantage expected from the reduction.

84. The revenue of the year, amounting to the handsome sum of Rs. 22,31,803, is considerably larger than that realized in any previous year. The following table shows the financial progress during the last 10 years :—

Year.	Receipts.	Surplus.	Proportion of Surplus to Receipts, in per cent.
	Rs.	Rs.	
1872-73	8,27,469	4,91,445	59
1873-74	10,68,621	5,94,090	56
1874-75	10,74,802	4,12,164	38
1875-76	17,79,020	9,64,270	54
1876-77	15,51,468	5,48,424	35
1877-78	16,03,023	7,47,207	47
1878-79	11,37,562	4,19,161	37
1879-80	11,80,190	4,26,700	36
1880-81	15,16,613	8,04,045	53
1881-82	22,31,803	10,81,581	48

As the revenue depends to a considerable extent on the state of the export trade, it stands to reason that the receipts must fluctuate from year to year. At present the price of teak is very high, and the receipts in 1882-83 are reported to exceed even those of 1881-82, although the reduction of the import duty has caused a loss of about  $2\frac{1}{2}$  lakhs of Rupees; but it must not be expected that the receipts will maintain their present height. On the whole, however, the revenue is decidedly rising, and the Burma forests are without doubt the most valuable in India.

#### Coorg.

85. The working of the Ghat forests is not in a satisfactory condition. After the failure of the license system, the plan of working the forests through a contractor was tried, but this plan failed also. It is now proposed to work them departmentally, but whether this method will be financially successful remains to be seen.

86. The financial results of the last five years are as follow :—

	Receipts.	Surplus.
	Rs.	Rs.
1877-78 to 1880-81, average per year ...	85,669	39,983
1881-82 ... ..	1,00,364	40,506

The receipts are higher than the average of the previous four years, but the surplus is about the same, which is not altogether satisfactory.

87. The quantity of sandalwood sold during the last four years and the prices realized are as follow :—

YEAR.	TONS.	AMOUNT REALIZED.	
		Total.	Per ton.
		Ra.	Ra.
1878-79 ... ..	33½	14,346	425
1879-80 ... ..	101	35,890	355
1880-81 ... ..	112½	34,324	305
1881-82 ... ..	60½	14,054	231
Average per year ...	77	24,653	320

It has not been satisfactorily explained whether the gradually falling prices are due to combination among the purchasers, or to the flooded state of the market. It is proposed to sell the wood in future at a suitable station in Mysore, so as to obtain the benefit of a wider competition.

#### Assam.

88. The departmental timber operations have been reduced during the year, only 378 trees having been cut, against 599 in the previous year. The number of trees sold standing to private purchasers has, on the other hand, increased from 4,411 to 6,112, besides 4,377 trees which were made over free of charge to the Assam Railway and Trading Company. Upwards of 23,000 maunds of charcoal have been removed from the Government forests, and it seems likely that the demand for this article will largely increase as the forests on the tea plantations are reduced.

89. The financial results of the last three years are as follow :—

YEAR.	RECEIPTS.	CHARGES.	SURPLUS.
	Ra.	Ra.	Ra.
1879-80 ... ..	1,64,336	1,32,830	31,506
1880-81 ... ..	1,68,997	1,42,725	26,272
1881-82 ... ..	1,66,053	1,65,361	692

While the receipts have been stationary, the charges have risen steadily, until they now equal the receipts. The unsatisfactory state of the tea industry has affected the revenue unfavourably, and no large surplus can be expected from the Assam forests for some years to come.

#### Berar.

90. The financial results of the year compare as follow with those of the previous three years :—

YEAR.	RECEIPTS.	CHARGES.	SURPLUS.
	Ra.	Ra.	Ra.
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	1,28,969	1,37,587
1881-82 ... ..	2,33,511	1,52,985	80,526

The surplus has fallen off during the last three years, and it is desirable that the matter should be fully investigated.

Export of Forest Produce.

91. The following statement gives some indication of the quantities of forest produce exported from India during the year :—

ARTICLES.	QUANTITY IN TONS OF 20 CWT. ; IN THE CASE OF TEAK, 50 CUBIC FEET,		VALUATIONS AT PORT OF SHIPMENT IN 1881-82.	
	Average of eleven years, 1870-71 to 1880-81.	In 1881-82.	Total.	Per ton.
			Rs.	Rs.
1. Caoutchouc ... ..	544	534	10,88,426	2,038
2. Shell-lac ... ..	3,024	4,324	55,52,413	1,284
3. Lac-dye ... ..	459	251	91,958	366
4. Sandalwood, Ebony, and other ornamental woods	.....	(Not known)	4,69,790	(Not known)
5. Cutch and Gambier ... ..	13,479	9,944.	25,30,840	255
6. Myrabolans ... ..	18,179*	19,578	14,44,925	74
7. Teak ... ..	53,560	56,377	50,67,917	90
Total ... ..	.....	.....	1,62,46,269	.....

\* Average of six years only.

There has been a fair increase in the export of shell-lac, and a considerable falling-off in that of cutch and gambier. The value of the total exports is almost the same as that of the previous year.

## APPENDICES.

### APPENDIX I.

Rules regarding the appointment, promotion, &c., of Officers of the Forest Department.

I.—The present rules refer to Conservators, Deputy, and Assistant Conservators, and to officers holding special appointments but taking rank as Deputy Conservators.

II.—The class of Assistant Conservators is recruited chiefly by the appointment by the Secretary of State of candidates who, after having passed the Entrance Examination held annually at the India Office, have successfully completed the prescribed course of professional training.

Vacancies that may arise in the class of Assistant Conservators should be reported by Local Governments for the orders of the Government of India, with proposals for filling them, either by posting to their province trained officers expected from home, or by the promotion of deserving Sub-Assistant Conservators.

III.—Assistant Conservators will, as a rule, be appointed to the 3rd grade, and they will be eligible for promotion successively to the 2nd and 1st grades on their passing the prescribed examinations and obtaining the needful certificate of qualification from the Conservator.

Promotion, as far as vacancies permit, will not necessarily be given immediately on passing, or solely in consequence of passing, the examinations: the merits and qualifications of each officer will also be taken into consideration.

IV.—The tests and qualifications required for promotion in the grades of Assistant Conservators are as follow:—

Before promotion to the 2nd grade of Assistant Conservators, an officer must have passed the examination in a "principal" language of his province by the Lower Standard, as prescribed by the rules in force for the time being, and must have obtained a certificate from the Conservator of Forests that he is competent to hold charge of a forest range.

Before promotion to the 1st grade of Assistant Conservators, an officer must have passed the examinations in a "principal" language of his province by the Higher Standard, in the elements of law, and the land revenue system of his province, as prescribed by the rules in force for the time being, and he must have obtained a certificate from the Conservator of Forests in his province that he is competent to hold charge of a forest division.

An officer transferred to another province during the first two years of his service in India is required to pass in a "principal" language of his new province by the lower standard within two years from the date of his transfer. If he fails so to pass, he will not be eligible for promotion, although he may have qualified for such promotion in other respects.

In the provinces in which two languages are "principal," an officer who has passed in both languages by the Lower Standard, and an officer who has passed by the Lower Standard in two languages, each being a "principal" language of a different province in which he has served, will, if otherwise qualified, be eligible for promotion to the 1st grade of Assistant Conservators without being required to pass in any language by the Higher Standard.

In British Burma an officer who has passed by the Lower Standard in Burmese, and has also passed the examination in the Karen language, will be eligible for promotion in the same way.

In conducting the examinations in the elements of Law and in the Land Revenue Systems, Forest Officers should be called upon to answer questions set from the following parts of Baden-Powell's Manuals of "The Land Revenue Systems and Land Tenures of British India" and "Jurisprudence for Forest Officers," respectively:—

(a) *Land Revenue Systems*.—Book I (Introductory), and the Chapters which refer to the system of the province in which the officer is serving.

(b) *Forest Law*.—Parts I to IV. [*N.B.*—The study of Part V, "The Civil Law as related to Forest Administration," should be urged upon Forest Officers, but it is not considered desirable at present to extend the prescribed examination to this Part.]

The certificates of qualification for promotion to the higher grades of Assistant Conservators shall be in the following forms:—

1. "I certify that Mr. A. B., Assistant Conservator of Forests of the 3rd grade [or 2nd grade], has passed the prescribed examination for the Lower Standard [or the Higher Standard] in the\* \_\_\_\_\_ language, [and in the elements of law and of the land revenue system of † \_\_\_\_\_]"

\* Here enter the language or languages in which the officer has passed.

† Here enter the name of the province.

2. " I certify that I consider Mr. A. B., Assistant Conservator of Forests of the 3rd grade [or 2nd grade], fully competent to hold charge of a forest range [or a forest division].

(Signature)

Conservator of Forests, \_\_\_\_\_."

The Conservator of Forests may grant the second of these certificates as soon as he considers an officer fit to hold charge of a forest range [or a forest division], even although such officer may not have then passed in the vernacular, in the elements of law, or in the land revenue system of the province.

In the case of Assistant Conservators who are natives of India, it will rest with Local Governments to lay down rules regarding the qualification in languages to be required for their promotion to the 1st and 2nd grades of Assistant Conservators, in lieu of those laid down in this paragraph.

V.—As the numbers in the 2nd and 3rd grades of Assistant Conservators are not fixed, officers may be promoted substantively from the 3rd to the 2nd grade on qualifying, irrespective of the numbers in each of the two grades, but no officiating promotions will be made to the 2nd grade of Assistant Conservators. Promotions beyond the 2nd grade of Assistant Conservators will be regulated by vacancies.

VI.—Promotions from the 3rd grade of Assistant Conservators up to and including the 2nd grade of Deputy Conservators, whether permanent or temporary, will be made by Local Governments. In the case of officers on the Bengal-Assam List, such promotions will be made by the Lieutenant-Governor of Bengal in consultation with the Chief Commissioner of Assam. Similar promotions on the Central Provinces-Berar List will be made by the Chief Commissioner of the Central Provinces in consultation with the Resident at Hyderabad. Should any difference of opinion arise as to the promotions to be made, the case should be reported for the decision of the Government of India.

VII.—Promotions from the 2nd grade to the 1st grade of Deputy Conservators, the appointment and promotion of Conservators, and the appointment or promotion of the six special officers, whether permanent or temporary, will be made by the Government of India.

To enable the Government of India to select officers for promotion in these cases, Local Governments should submit, immediately after the Annual Progress Report of the Forest Department has been reviewed by them, the names of any officers whom they may consider deserving of advancement.

VIII.—In the absence of properly qualified officers in the higher grades, junior officers will be eligible for promotion. Promotion will not be given, and cannot under any circumstances be claimed, on grounds of seniority alone.

IX.—An officer officiating in a class divided into grades will officiate in, and be entitled to the pay of, the lowest of such grades, unless it be otherwise specially ordered with the sanction of the Government of India.

An officer officiating in a grade of the same class as, and immediately above, his own, is entitled to the pay of that grade.

X.—An officiating officer in any case not provided for by Rule IX will be entitled to an acting allowance of one-fifth of the pay of the grade in which he officiates, or to such other allowance as may be specially fixed by the Government of India.

XI.—In cases of misconduct, Local Governments may reduce Deputy Conservators to the class of Assistants, and Assistants or Deputy Conservators to a lower grade in the same class. The reduction of Conservators and of officers holding any of the six special appointments to a lower grade or class, and the removal of Conservators and Deputy or Assistant Conservators from the staff, will rest with the Government of India.

XII.—When an officer is reduced to a lower class or grade, his name will, as a rule, be placed at the bottom of the list of officers of that grade; but should the Local Government, under whom the officer is serving, desire in any special case that the officer degraded be placed in any other position in the lower grade, the fact should be stated in the order reducing the officer.

XIII.—The Government of India alone has the power of accepting the resignation of a Conservator or of a Deputy or Assistant Conservator.

XIV.—Transfers from one province to another will only be made in exceptional cases, but the Government of India reserves to itself the right of transferring officers from one province to another for the benefit of the public service, or on grounds of health. When an officer is transferred from one province to another at his own request, such transfer will ordinarily carry with it the condition that his name shall be placed in the list of his new province at the bottom of the grade or class to which he belongs.

XV.—Postings and transfers of officers within a province will be made by Local Governments.

XVI.—Leave of absence may be granted by Local Governments to officers of the Forest Department under the rules applicable to the branch of the service to which such officers

belong. In dealing with applications for leave, Local Governments will, in granting leave, take into consideration the fact that the staff now allotted to each province cannot, as a rule, be augmented by the Government of India in order to provide substitutes for officers on leave.

XVII.—The fact and date of retirement of officers in all grades should be specially reported to the Government of India, and that Government should also be furnished promptly and regularly with copies of all notifications issued by Local Governments which refer to the promotion or reduction of officers, whether permanent or temporary, or to the grant of leave.

## APPENDIX II.

Memorandum of conditions for the admission and training of candidates for the appointment of Forest Ranger at the Forest School: dated the 1st December 1881.

1. CANDIDATES for appointment as Forest Rangers, who desire to be received at the Central Forest School, will be selected by Conservators of Forests, acting under such orders as may from time to time be given by the Local Government or Administration under which they are serving. Ordinarily only natives of India will be so admitted.

2. As a rule, no students will be received at the Forest School who have not proved their fitness for Forest work by service in the subordinate staff of the Department, whether permanent or temporary, during a period of not less than twelve months.

3. It will be the duty of the Conservator to satisfy himself that the candidate has a good moral character, active habits, fair powers of observation, and sense of locality, and such other qualifications as are necessary for a Forest Ranger.

4. Candidates for admission to the School must produce the certificate of having passed the Entrance Examination of an Indian University. In the case of both an English and an Oriental side existing at any University, the Entrance Examination must have been passed on the English side. The condition of having passed the Entrance Examination may be dispensed with in the case of candidates now in the Forest service, provided the Director of the Forest School is satisfied that they have attained such a standard of general education as will enable them to follow the course of instruction with advantage.

5. Students must on admission to the School be not less than 18 or more than 25 years of age. Each candidate will be required to furnish a certificate of sound health, good vision, and hearing from the Civil Surgeon of the station nearest to his place of residence.

6. Candidates selected for admission to the School will join at Dehra Dún on the 1st July. The course of training will be partly theoretical and partly practical. The theoretical course will generally extend from the 1st July to the 31st October, while the remaining eight months of the year will be devoted to practical work in the forests. The Forest Ranger's certificate may be granted at the end of sixteen months, which will include two terms of theoretical teaching. But it will rest with the Director to extend the course of instruction by an additional period not exceeding twelve months.

The theoretical course will be gone through at Dehra Dún. The practical instruction will be given either in the Divisions attached to the Forest School, or in the Forest Survey, the Working-Plan Branch, or in selected Divisions of other provinces or circles.

7. While at the Forest School students will receive the same rate of pay which they drew while employed in the subordinate staff of their province, or such other allowance as the Conservator, under the authority of the Local Government, may sanction, the Government of India being informed of the orders passed in each case.

8. During the course of instruction the Director will furnish Conservators of Forests with monthly reports on the application and progress of the students sent by them to the School.

The Director has power to dismiss any student for misconduct; and a student thus dismissed will not be re-admitted to the School. The Director may also remand to his province, or circle, any student who, in his opinion, is not suitable or sufficiently promising.

9. Successful students who at the close of the course of instruction have received a Forest Ranger's certificate will, as a rule, return to, and be employed in, the province or circle from which they were sent to the Forest School. On return to their province or circle they will be appointed to the class of Forest Ranger, or, in the absence of vacancies, to the higher grades in the class of Forester.

10. After the 1st April 1885 no person who has not obtained the Forest Ranger's certificate at the Forest School, in the manner here prescribed, shall be appointed a Forest Ranger without the special sanction in each case of the Local Government.

11. Forest Rangers, whether they have received the Forest Ranger's certificate or not, but who, in any case, have served for not less than two years as Forest Ranger, may, under such rules and conditions as may be prescribed by Government, be deputed to the Forest School for a course of instruction, with the view of qualifying for promotion to the superior staff. But no Forest Ranger will be admitted to the School who is over 30 years of age.



STATEMENT I.

Summary of the Revenue and Expenditure of the Forest Department in the Provinces immediately under the Government of India for the year 1881-82.

BUDGET HEADS.	Bengal.	North-Western Provinces and Oudh.	Punjab.	Central Provinces.	British Burma.	Coorg.	Assam.	Ajmera.	Surveys.	Total of British Provinces under the Government of India.	Hyderabad Assigned Districts.	Biluchistan.	Grand Total.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
<i>Receipts.</i>													
I.—Timber and other produce removed from the forests by Government agency.	1,86,308	4,29,082	3,67,487	3,10,226	15,55,247	87,120	32,836	504	...	29,13,810	3,620	6,818	29,31,258
II.—Ditto ditto by consumers or purchasers ...	4,16,865	6,06,403	2,77,159	8,31,748	1,76,817	28,582	1,22,312	2,072	...	24,61,958	2,26,396	9,774	26,98,128
III.—Confiscated drift and waif wood ...	3,767	11,585	11,416	4,728	1,58,359	5,500	1,777	9	...	1,97,141	2,150	...	1,99,291
IV.—Revenue from forests not managed by Government ...	...	5,624	11,823	8,463	3,32,877	...	7,651	...	...	3,66,438	...	...	3,66,438
V.—Miscellaneous ...	26,794	13,400	20,423	17,719	8,503	29,162	1,477	1,481	...	1,13,959	1,335	25	1,20,319
Total Receipts ...	6,33,734	10,66,094	6,83,308	11,72,884	22,31,303	1,00,364	1,66,053	4,066	...	60,63,306	2,33,511	18,617	63,15,434
<i>Expenditure.</i>													
<b>A.—CONSERVANCY AND WORKS.</b>													
I.—Timber and other produce removed from the forests by Government agency.	1,13,252	3,88,434	1,41,308	1,20,392	6,98,190	16,511	4,481	300	...	14,82,868	284	4,972	14,88,124
II.—Ditto ditto by consumers or purchasers ...	81,538	31,682	882	1,53,104	7,700	...	4,606	1	...	2,29,563	18,669	...	2,48,232
III.—Confiscated drift and waif wood ...	395	860	622	...	67,016	...	144	...	...	69,037	...	...	69,037
IV.—Revenue from forests not managed by Government ...	...	...	4,174	...	...	...	...	...	...	4,174	...	...	4,174
V.—Rent of leased forests, and payments to shareholders in forests managed by Government.	...	18,493	33,155	251	...	...	...	...	...	48,904	17,120	1,761	65,785
VI.—Live and dead stock ...	17,042	23,257	4,571	9,628	49,358	3,397	14,012	50	2,730	1,29,033	6,339	89	1,35,461
VII.—Communications and buildings ...	82,794	90,915	10,895	5,147	16,779	792	19,602	121	...	1,76,445	11,582	638	1,88,665
VIII.—Demarcation, improvement, and extension of forests...	49,759	71,677	39,250	23,689	60,933	9,002	42,998	5,128	6,092	3,08,528	13,921	688	3,23,137
IX.—Miscellaneous ...	962	14,702	762	5,532	9,000	2,614	3,038	31	48	36,689	2,614	6	39,309
Total Conservancy and Works ...	2,45,792	6,40,025	2,35,019	3,17,743	9,08,974	82,306	89,881	5,637	8,870	24,83,241	70,529	8,154	25,61,924
<b>B.—ESTABLISHMENTS.</b>													
I.—Salaries ...	1,28,988	2,29,454	2,30,959	1,52,186	1,94,711	21,907	61,728	7,024	26,614	10,53,569	68,697	7,415	11,29,681
II.—Travelling allowances ...	13,773	33,311	35,631	15,449	33,874	4,858	11,115	891	5,160	1,54,062	7,153	2,022	1,63,237
III.—Contingencies ...	6,058	13,422	14,661	11,635	12,663	787	3,637	408	1,845	65,116	6,606	90	71,812
Total Establishments ...	1,48,817	2,76,187	2,81,251	1,79,270	2,41,248	27,552	76,480	8,323	33,619	12,72,747	82,456	9,527	13,64,730
Grand Total of Expenditure ...	3,94,609	9,16,212	5,16,270	4,97,013	11,50,222	53,858	1,65,361	13,954	42,489	37,55,988	1,52,985	17,661	39,26,654
Surplus ...	2,39,125	1,49,882	1,72,038	6,75,871	10,81,581	40,506	692	...	...	23,07,318	60,526	936	23,88,780
Deficit ...	...	...	...	...	...	...	...	9,888	42,489	...	...	...	...

## STATEMENT II

*Financial Results of Forest Administration in the Provinces immediately under the Government of India for the year 1881-82.*

PROVINCE.	TIMBER AND OTHER PRODUCE REMOVED FROM THE FORESTS BY GOVERNMENT AGENCY.			OTHER REVENUE.			Formation, Protection, and Improvement of Forests.	TOTAL.			
	Receipts.	Charges.	Surplus or Deficit.	Receipts.	Charges.	Surplus.	Charges.	Receipts.	Charges.	Surplus.	Deficit.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Bengal ... ..	1,88,897	1,50,181	+32,716	4,44,837	1,12,169	3,32,677	1,26,268	6,83,734	3,94,609	2,39,125	...
North-Western Provinces and Oudh ... ..	4,29,731	5,15,975	-86,244	6,36,363	1,61,278	4,75,085	2,38,959	10,66,094	9,16,212	1,49,882	...
Punjab ... ..	3,78,903	2,71,120	+1,07,783	3,09,405	1,00,716	2,08,689	1,44,440	6,88,308	5,16,270	1,72,038	...
Central Provinces ... ..	3,10,176	1,38,313	+1,71,863	8,62,708	2,21,152	6,41,556	1,37,548	11,72,884	4,97,013	6,75,871	...
British Burma ... ..	17,15,287	9,44,460	+7,70,827	5,16,516	70,441	4,46,075	1,35,321	22,31,803	11,50,222	10,81,581	...
Coorg ... ..	87,120	29,346	+7,774	63,244	7,470	55,774	23,022	1,00,364	52,353	40,506	...
Assam ... ..	23,894	9,157	+14,737	1,42,159	36,944	1,05,215	7,19,260	1,66,053	1,65,361	692	...
Ajmere ... ..	505	2,406	-1,901	8,561	2,137	1,424	3,411	4,066	13,954	...	9,838
Forest Survey ... ..	...	..	..	...	...	...	1,42,439	...	42,439	...	42,439
Total ... ..	30,84,513	20,66,958	+10,17,555	29,78,793	7,12,292	22,66,501	9,76,738	60,63,306	37,55,983	23,07,313	...
Berar ... ..	3,629	284	+3,345	2,29,882	1,05,629	1,24,253	47,072	2,33,511	1,52,985	80,526	...
Biluchistan ... ..	8,817	7,354	+1,463	9,809	4,142	5,668	6,185	18,817	17,081	936	...
Grand Total ... ..	30,96,959	20,74,596	+10,22,363	32,18,475	8,22,063	23,96,412	10,29,995	63,15,434	39,26,654	23,88,780	...

STATEMENT III.

Receipts and Charges of the Forest Department throughout India during the eighteen years from 1864-65 to 1881-82.

RECEIPTS.

PROVINCES.	1864-65.	1865-66.	1866-67 (11 months).	1867-68.	1868-69.	1869-70.	1870-71.	1871-72.	1872-73.	1873-74.	1874-75.	1875-76.	1876-77.	1877-78.	1878-79.	1879-80.	1880-81.	1881-82.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Bengal ... ..	...	38,584	50,555	75,687	2,24,546	1,13,753	1,19,678	1,89,088	1,49,851	1,16,683	1,85,933	1,98,274	2,22,401	4,26,228	4,16,024	4,49,524	5,61,340	6,33,734
North-Western Provinces and Oudh ...	6,98,644	7,70,370	7,79,200	5,77,844	7,85,211	8,38,077	4,25,257	11,70,901	19,39,114	19,32,677	13,63,858	12,64,356	11,50,671	12,03,108	11,26,755	10,39,966	9,42,229	10,66,094
Punjab ... ..	2,95,730	2,08,050	2,81,470	2,79,297	3,45,164	3,94,132	10,40,368	7,35,002	6,52,994	7,32,540	8,34,874	9,05,742	5,98,754	6,83,710	5,00,620	6,40,819	6,71,879	6,68,308
Central Provinces ... ..	89,307	2,02,644	3,67,095	3,49,491	3,50,536	4,16,020	6,58,120	4,47,764	4,81,679	5,68,367	6,61,779	7,25,835	6,61,326	6,83,910	8,52,862	10,06,723	8,50,139	11,72,884
British Burma ... ..	9,86,233	8,98,629	4,24,053	6,47,590	8,16,171	9,84,773	8,18,124	7,72,399	8,27,469	10,68,621	10,74,802	17,79,020	15,51,468	16,03,023	11,87,562	11,80,190	15,16,613	22,31,808
Coorg ... ..	1,02,218	1,08,257	31,934	77,748	74,448	1,08,152	74,067	92,453	84,424	1,10,079	53,012	1,07,457	75,929	1,01,015	52,020	1,01,786	87,857	1,00,364
Ajmere ... ..	...	...	...	...	...	...	...	...	24	508	203	410	905	3,002	1,241	1,861	1,124	4,066
Assam ... ..	...	...	...	...	...	...	...	...	...	62,726	64,749	1,07,302	81,568	1,34,326	1,61,779	1,64,336	1,68,997	1,66,053
Surveys ... ..	...	...	...	...	...	...	...	...	...	...	...	...	...	...	63	38	272	...
<b>Total</b> ... ..	<b>21,17,132</b>	<b>22,26,534</b>	<b>18,84,307</b>	<b>20,07,455</b>	<b>25,96,076</b>	<b>23,49,907</b>	<b>31,35,614</b>	<b>33,57,607</b>	<b>41,35,549</b>	<b>45,92,151</b>	<b>42,43,710</b>	<b>50,87,896</b>	<b>43,43,022</b>	<b>48,38,322</b>	<b>42,48,926</b>	<b>45,94,243</b>	<b>48,00,250</b>	<b>60,63,306</b>
Madras ... ..	3,11,778	3,26,204	3,38,608	4,24,184	3,91,179	4,95,789	3,89,762	4,13,882	4,18,767	4,64,194	3,64,326	4,26,359	4,15,312	4,04,164	3,83,694	3,65,750	5,01,539	5,06,710
Bombay and Sind ... ..	10,70,210	10,07,610	8,21,268	8,84,245	12,13,482	12,35,257	11,77,425	11,50,210	11,46,404	11,83,090	12,23,995	12,48,672	12,24,658	12,61,529	11,61,893	15,24,712	15,22,807	18,28,089
<b>TOTAL REVENUE (BRITISH INDIA)</b>	<b>84,99,120</b>	<b>35,60,348</b>	<b>30,44,183</b>	<b>33,15,984</b>	<b>42,07,737</b>	<b>45,80,953</b>	<b>46,52,801</b>	<b>49,26,699</b>	<b>57,00,720</b>	<b>62,44,435</b>	<b>58,32,031</b>	<b>67,62,927</b>	<b>50,84,992</b>	<b>55,04,015</b>	<b>53,14,513</b>	<b>64,84,705</b>	<b>68,24,896</b>	<b>83,98,105</b>
Hyderabad Assigned Districts ...	2,369	15,106	43,574	53,446	84,558	1,45,491	1,77,329	1,55,544	2,59,861	2,63,256	2,60,674	2,32,817	2,53,136	2,79,231	2,85,670	3,07,501	2,66,556	2,33,511
Biluchistan ditto ... ..	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	14,376	18,617
<b>GRAND TOTAL OF REVENUE...</b>	<b>35,01,488</b>	<b>35,75,454</b>	<b>30,87,757</b>	<b>33,69,330</b>	<b>42,85,293</b>	<b>47,26,434</b>	<b>48,30,130</b>	<b>50,82,243</b>	<b>59,60,581</b>	<b>65,07,691</b>	<b>60,92,705</b>	<b>69,95,744</b>	<b>62,38,128</b>	<b>67,83,246</b>	<b>61,00,183</b>	<b>67,92,206</b>	<b>71,05,828</b>	<b>86,50,233</b>

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STATEMENT III—continued.

EXPENDITURE.

A.—On Conservancy and Works.

PROVINCES.	1864-65.	1865-66.	1866-67 (11 months).	1867-68.	1868-69.	1869-70.	1870-71.	1871-72.	1872-73.	1873-74.	1874-75.	1875-76.	1876-77.	1877-78.	1878-79.	1879-80.	1880-81.	1881-82.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Bengal ... ..	2,092	19,480	89,326	1,41,382	95,581	61,004	26,272	43,907	28,526	28,552	39,062	68,255	90,172	1,46,857	2,10,914	1,50,295	1,89,619	2,45,792
North-Western Provinces and Oudh ...	3,82,780	2,45,158	2,66,187	2,74,818	3,69,869	3,59,149	5,94,829	8,95,931	9,54,515	9,72,991	8,75,039	5,40,335	6,50,002	5,09,798	5,72,085	4,63,591	4,15,418	6,40,025
Punjab ... ..	1,62,120	1,94,110	1,76,950	1,75,920	1,93,516	5,55,375	10,30,005	4,73,003	5,45,068	3,54,457	4,19,305	3,18,498	2,70,330	2,58,949	2,58,952	2,20,827	2,25,277	2,35,019
Central Provinces ... ..	85,610	83,504	46,817	1,13,068	1,86,925	3,65,801	1,95,251	1,24,621	1,33,666	1,67,010	1,78,513	2,40,523	1,67,334	1,78,401	2,36,029	3,58,380	3,40,386	3,17,743
British Burma ... ..	1,77,158	2,21,739	2,04,591	2,25,049	3,22,981	3,11,404	2,89,445	2,45,514	2,03,929	3,32,391	5,31,841	6,60,515	8,22,064	6,40,062	5,00,783	5,29,692	4,77,866	9,08,974
Coorg ... ..	4,688	3,995	4,425	5,354	7,175	22,851	14,822	20,714	18,324	23,001	23,773	25,991	18,493	16,453	14,671	30,542	29,956	32,306
Ajmere ... ..	...	...	...	...	...	...	...	...	4,878	15,777	17,753	12,963	11,433	6,961	5,182	5,280	4,755	5,631
Assam ... ..	...	...	...	...	...	...	...	...	...	18,901	31,138	33,187	42,005	48,954	64,519	72,157	69,209	88,881
Surveys ... ..	...	...	...	...	...	...	...	...	8,303	7,420	3,906	5,134	7,684	10,024	10,663	8,655	7,700	8,870
Total ... ..	7,64,448	7,22,986	7,88,296	9,35,591	11,76,047	16,75,584	21,50,624	18,08,690	18,97,209	19,20,500	21,20,330	19,05,401	20,79,517	18,16,459	18,73,798	18,39,419	17,60,186	24,83,241
Madras ... ..	94,657	1,36,528	1,14,251	1,62,037	1,32,693	1,46,821	1,56,779	1,94,814	3,03,735	1,75,370	2,21,864	2,39,945	1,94,943	1,59,867	1,24,406	1,63,367	1,32,206	1,63,544
Bombay and Sind ... ..	3,17,699	5,63,067	4,36,470	3,32,175	3,87,412	3,28,985	3,84,638	3,27,729	4,34,612	4,11,547	5,20,049	4,80,801	5,30,394	5,36,477	6,37,117	6,59,701	6,93,935	7,14,171
TOTAL (BRITISH INDIA) ... ..	11,76,804	14,22,581	13,39,017	14,29,803	16,96,152	21,51,390	26,92,041	23,31,233	26,35,556	25,07,417	28,62,243	26,26,147	28,04,854	25,12,803	26,35,321	26,62,437	25,86,327	33,60,956
Hyderabad Assigned Districts ... ..	...	...	...	2,184	6,552	22,018	43,034	62,759	45,062	44,117	45,514	42,287	40,506	49,715	39,544	42,352	57,356	70,529
Biluchistan " " ... ..	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	6,015	8,154
GRAND TOTAL ... ..	11,76,804	14,22,581	13,39,017	14,31,987	17,02,704	21,73,408	27,35,075	23,93,992	26,80,618	25,51,534	29,07,757	26,68,434	28,45,360	25,62,518	26,74,865	27,04,839	26,49,638	34,39,639

STATEMENT III—continued.

B.—On Establishments.

PROVINCES.	1864-65.	1865-66.	1866-67 (11 months).	1867-68.	1868-69.	1869-70.	1870-71.	1871-72.	1872-73.	1873-74.	1874-75.	1875-76.	1876-77.	1877-78.	1878-79.	1879-80.	1880-81.	1881-82.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Bengal ... ..	6,604	16,292	14,881	24,223	30,676	34,870	60,186	64,429	71,090	56,936	60,341	70,831	1,21,517	1,14,354	1,27,757	1,25,453	1,45,762	1,48,617
North-Western Provinces and Oudh ...	92,893	1,06,125	1,05,282	1,08,204	1,31,090	1,69,531	1,81,047	2,01,020	2,07,917	1,92,949	1,85,663	1,95,994	2,10,247	2,18,427	2,37,892	2,53,003	2,64,156	2,76,187
Punjab ... ..	84,665	77,968	78,680	97,955	1,15,828	1,58,279	2,03,951	2,27,321	2,50,874	2,42,705	2,27,175	2,35,728	2,52,153	2,58,217	2,64,602	2,59,849	2,70,091	2,81,251
Central Provinces ... ..	61,946	74,994	81,041	99,031	1,07,730	1,08,445	1,12,182	1,07,059	1,14,171	1,16,546	1,15,726	1,30,240	1,21,306	1,39,277	1,57,686	1,64,193	1,55,127	1,79,270
British Burma ... ..	86,081	90,327	80,544	1,03,339	99,191	1,10,058	1,11,293	1,32,935	1,32,095	1,42,140	1,30,797	1,54,235	1,82,980	2,15,754	2,17,618	2,23,798	2,34,702	2,41,248
Coorg ... ..	4,201	8,654	7,127	8,610	9,301	10,231	9,777	10,267	11,840	11,708	14,226	11,688	14,836	19,814	20,158	24,622	26,531	27,552
Ajmere ... ..	...	...	...	...	...	...	...	...	8,177	8,563	8,813	14,383	11,025	7,965	8,263	8,470	7,668	8,323
Assam ... ..	...	...	...	...	...	...	...	...	...	31,721	28,385	28,697	47,915	51,333	61,508	60,673	73,516	76,480
Surveys ... ..	...	...	...	...	...	...	...	...	12,875	42,852	57,614	53,859	49,820	49,684	49,662	38,222	32,635	33,619
Total of Establishment Charges ...	3,36,390	3,74,360	3,67,555	4,41,362	4,93,816	5,91,414	6,78,436	7,43,031	8,08,539	8,46,120	8,28,740	8,95,655	10,11,799	10,74,825	11,45,146	11,58,283	12,10,188	12,72,747
TOTAL OF ALL CHARGES ...	11,00,838	10,97,346	11,55,851	13,76,953	16,69,863	22,66,998	28,29,060	25,51,721	27,05,748	27,66,620	29,49,070	28,01,056	30,91,316	28,91,284	30,18,944	29,97,702	29,70,374	37,55,968
Madras ... ..	95,300	1,17,054	1,02,920	1,26,223	1,37,779	1,39,870	1,38,081	1,50,902	1,74,412	1,77,814	1,76,008	1,90,188	2,19,027	2,22,626	2,17,898	2,17,861	2,19,798	2,27,642
Bombay and Sind ... ..	2,10,352	2,11,987	2,10,973	2,14,962	2,39,711	2,15,811	2,38,125	2,57,035	2,78,430	2,93,990	2,96,071	2,97,676	3,01,548	3,20,467	3,62,044	3,96,612	4,21,161	4,34,287
Total of Establishment Charges (British India) ...	6,42,042	7,03,401	6,81,448	7,82,547	8,71,306	9,47,095	10,54,642	11,50,968	12,61,381	13,17,924	13,00,819	13,83,469	15,32,374	16,17,918	17,24,588	17,72,756	18,51,147	19,34,676
TOTAL OF ALL CHARGES (BRITISH INDIA) ...	18,18,846	21,25,982	20,20,465	22,12,350	25,67,458	30,98,485	37,46,683	34,82,201	38,96,937	38,25,341	41,63,062	40,08,616	43,37,228	41,30,721	43,59,909	44,35,243	44,37,474	52,95,632
Hyderabad Assigned Districts ...	478	8,991	13,718	16,157	27,553	58,692	38,938	38,071	37,994	41,523	45,875	48,586	54,146	60,253	67,806	68,162	71,613	82,456
Biluchistan " " ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	10,401	9,527
GRAND TOTAL OF ESTABLISHMENT CHARGES ...	6,42,520	7,12,392	6,95,166	7,98,704	8,98,859	10,05,787	10,93,580	11,89,039	12,99,375	13,59,447	13,46,694	14,32,055	15,86,520	16,78,171	17,92,894	18,40,918	19,33,161	20,26,659
GRAND TOTAL OF ALL CHARGES	18,19,324	21,34,973	20,34,183	22,30,691	26,01,563	31,79,195	38,28,655	35,83,081	39,79,993	39,10,981	42,54,461	41,00,489	44,31,880	42,40,689	44,67,259	45,45,757	45,82,859	54,66,298

STATEMENT III—concluded.

SURPLUS REVENUE.

PROVINCES.	1864-65.	1865-66.	1866-67 (11 months).	1867-68.	1868-69.	1869-70.	1870-71.	1871-72.	1872-73.	1873-74.	1874-75.	1875-76.	1876-77.	1877-78.	1878-79.	1879-80.	1880-81.	1881-82.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
British India, excluding Madras and Bombay ... ..	10,16,294	11,29,188	7,28,456	6,30,502	9,26,218	5,82,909	3,06,554	8,05,886	14,29,801	18,25,581	12,94,640	22,86,840	12,51,706	19,47,038	12,29,982	15,96,541	18,29,876	23,07,318
The Presidency of Madras ...	1,21,821	72,622	1,21,437	1,35,924	1,20,707	2,09,098	44,902	78,166	(Deficit 59,880)	1,11,010	(Deficit 33,546)	(Deficit 8,724)	1,342	21,671	41,890	(Deficit 15,478)	1,49,835	1,15,524
Ditto of Bombay ...	5,42,159	2,32,556	1,78,825	3,37,108	5,86,359	6,90,461	5,54,662	5,65,446	4,33,362	4,82,553	4,07,875	4,70,195	3,94,716	4,04,585	1,82,732	4,68,399	4,07,711	6,79,631
<b>TOTAL NET REVENUE (BRITISH INDIA)</b>	<b>16,80,274</b>	<b>14,34,866</b>	<b>10,29,718</b>	<b>11,08,534</b>	<b>16,33,279</b>	<b>14,82,468</b>	<b>9,06,118</b>	<b>14,44,498</b>	<b>18,03,783</b>	<b>24,19,094</b>	<b>16,68,969</b>	<b>27,53,311</b>	<b>16,47,764</b>	<b>23,73,294</b>	<b>14,54,604</b>	<b>20,49,462</b>	<b>23,87,422</b>	<b>31,02,473</b>
Hyderabad Assigned Districts ...	1,890	6,116	29,856	35,105	50,451	64,771	95,357	54,714	1,76,805	1,77,618	1,69,285	1,41,944	1,58,484	1,69,269	1,78,320	1,96,987	1,37,587	80,526
Biluchistan ditto ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	(Deficit 2,040)	938
<b>GRAND TOTAL OF NET REVENUE</b>	<b>16,82,164</b>	<b>14,40,481</b>	<b>10,59,574</b>	<b>11,88,639</b>	<b>16,83,730</b>	<b>15,47,239</b>	<b>10,01,475</b>	<b>14,99,212</b>	<b>19,80,588</b>	<b>25,96,710</b>	<b>18,38,254</b>	<b>28,95,255</b>	<b>18,06,248</b>	<b>25,42,557</b>	<b>16,32,924</b>	<b>22,46,449</b>	<b>25,22,969</b>	<b>31,83,935</b>

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